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The 'Sheffield Report'
W.L.SAUNDERS

Development in Education leading to Formal Qualification
D.T.RICHNELL

The BSc Degree in Information Science at Newcastle upon Tyne
T.D.WILSON

University of Sheffield MSc Course in Information Studies
HERBERT SCHUR

Standards in Education in Information Science
J.FARRADANE

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ASLIB PROCEEDINGS

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Volume 21 January 1969 Number 1

ASLIB CALENDAR 1969

January

WED.29.	Chemical Group evening meeting. Aslib research programme, by B. C. Vickery.

February

WED.12.	Scottish Branch meeting. Speaker: Mr L. J. Anthony, Assistant Director (Services), Aslib.
TUE.18.	Midlands Branch meeting: Cover-to-cover technical translations.

March

FRI.21 – SAT.22.	Symposium: Accelerating innovation. Nottingham University, Lenton Hall.
TUE.25.	Midlands Branch annual general meeting. Birmingham.
WED.26.	Evening meeting at Aslib. Organizational aspects of information flow in technology, by Professor T. J. Allen. 5 for 5.30 p.m.
FRI.28.	Scottish Branch annual general meeting. Northern Branch annual general meeting.

April

THU.10 – SAT.12.	Northern and Midland Branches joint conference. Oxford.
FRI.11 – SUN.13.	Aeronautical Group annual conference.
TUE.15 – THU.17.	Chemical Group Conference: Commercial and marketing information.
WED.23.	Third Aslib Annual Lecture. Expert and layman in contemporary society; problems of function and communication, by the Baroness Wootton of Abinger.

May

THU.15.	Engineering Group conference. Birmingham.

September

SUN.21.	43rd Annual Conference, Coventry.

Aslib Symposium on Industrial Innovation and Information Functions

A symposium is to be held on Friday 21st and Saturday 22nd March 1969 with the title: 'Accelerating innovation: the future of the information function'. Speakers from industry, the research associations, the Ministry of Technology and university research centres are to contribute.

Research on technological innovation and the transfer of information has important implications for the information professions. In particular, it emphasizes a need for a fresh look at the objectives and strategies underlying the provisions of information services. The symposium will therefore include papers on recent research findings as well as papers examining the practical uses of this research in industrial information functions.

Aslib is organizing the symposium with the co-operation of industrial research associations and the Ministry of Technology. The theme is also expected to interest managers concerned with technological innovation and university research workers active in this field; publicity is therefore being directed at these groups.

The symposium is to be held at the University of Nottingham. The number of places is restricted to one hundred. The fee for Aslib members and members of research associations is 19 guineas.

UDC: Evening Meeting

At the evening meeting on Wednesday 26th February 1969 members will have an opportunity to hear of, and discuss, recent international and national activities in the development of the Universal Decimal Classification, especially the current BSI programmes for publishing a full English-language edition of the classification.

The speakers will be Mr G. A. Lloyd, Head of the UDC Section of the International Federation for Documentation, and Mr J. E. Wright, Chairman of BSI Sub-committee OC/20/4, which is responsible for compiling the English-language edition of the UDC.

The meeting, sponsored jointly by Aslib and BSI, will begin at 5.30 p.m. (tea at 5 p.m.) and will include a display of relevant publications.

Chemical Group Evening Meeting: Research at Aslib

This meeting, on Wednesday 29th January at 6 p.m., offers an opportunity for members to air their views on Aslib research and the direction they think it should take. Mr B. C. Vickery, Assistant Director (Research) at Aslib, will present some highlights of current Aslib research and then answer questions and participate in the discussion.

Members attending the meeting are invited to a New Year Sherry Party at 5 p.m. Sherry will be served with the compliments of the Aslib Chemical Group.

Aslib and Developing Countries

As part of its planning for the future, Aslib has during the past year or so been considering the extent to which it could, or should, offer assistance to the developing countries of the world, and particularly to those with a Commonwealth connection and an English-language tradition. Many of Aslib's 650 member organizations overseas are in such countries and are, of course, entitled to use Aslib's established services, but it has been felt that some further effort should be made and that short training courses and visits by advisory missions could offer the most appropriate form of help.

The first undertaking of this kind was carried out in November with the aid of a travel grant from the British Council, and of hospitality extended by the Councils for Scientific and Industrial Research in India and Pakistan. It took the form of an advisory mission consisting of Miss Maysie Webb, Assistant Director of the British Museum and until recently Keeper of the National Reference Library of Science and Invention, and Mr Harry East, Head of the Computer Applications Section of the Aslib Research Department. The purpose of the mission was to advise the Indian National Scientific Documentation Centre (INSDOC) in New Delhi, and the Pakistan National Scientific Documentation Centre (PANSDOC) in Karachi, on the further development of their scientific and technical information services to industry, the universities and government establishments. In particular, the application of computer and allied technologies to the work of the two organizations was a matter of detailed discussion.

In Karachi the discussions centred round two important developments: the establishment of National Science Libraries at Islamabad (West Pakistan) and Dacca (East Pakistan), and applications of ICL punched card equipment shortly to be installed at PANSDOC. Projects involving the use of this equipment in the production of bibliographies, records of microfilm holdings and lists of translations available were examined. In addition, visits were made to the State Bank Library and the Liaquat Memorial Library, both in Karachi. The visit was timed to coincide with the fifth meeting of the Commonwealth Scientific Committee, and Miss Webb and Mr East addressed a special session of this committee devoted to technical documentation and information.

Discussions at INSDOC were mainly concerned with mechanization developments (computer-produced indexes are currently being printed for *Indian Science Abstracts*) and the developing National Science Library. Visits were made to the Indian Institute of Technology at Delhi, the National Physical Laboratory, the Indian Agricultural Research Institute, the Shri Ram Institute for Industrial Research, Delhi University, the Bhakra Dam, Nangal Fertilizer and Heavy Water Factory, and the library of the University of the Punjab. Miss Webb and Mr East also addressed members of the Delhi Library Association at an evening meeting.

Since this mission was completed the Commonwealth Foundation has provided funds to enable Aslib to conduct a feasibility study for holding certain of its intensive training courses in Africa, and this study will take place early in the spring of 1969.

Scientific Information for Physicists

The Institute of Physics and the Physical Society, in conjunction with OSTI, held a one-day conference on scientific information for physicists, at the Institution of Electrical Engineers, on 4th December 1968. About eighty people—both active physicists and information workers—took part in a well-planned meeting. An introductory talk by B. C. Vickery of Aslib, on information needs and user behaviour, was followed by an account of NLL experience in education in the use of scientific information, given by Dr K. P. Barr. This theme recurred continually throughout the day, and its importance was emphasized by both professors and undergraduates in the audience.

The next three papers considered the major publications in physics—journals (Professor B. R. Coles), abstracts (J. R. Smith of INSPEC), and the American Institute of Physics' output (Mr Kranz). The possibilities of rationalizing primary publication were explored. Mr Smith was able to announce that on that very night the first computer-produced issue of *Physics Abstracts* was due to be processed, and both he and Mr Kranz outlined their future plans, which included close co-operation.

The afternoon was devoted to examining specialist services in physics—those of the UK Atomic Energy Authority (R. M. Fishenden), the Scientific Instruments Research Association (J. M. Myers), the Electronic Materials Information Centre (G. J. Rich), and the Crystallographic Data Centre (Mrs O. Kennard). The main themes of discussion were the possible relations between such special information centres and the disciplinary services such as *Physics Abstracts* and the relative roles of scientists and information workers in developing physics information services. The conference as a whole produced a useful dialogue between these groups.

Technical Information Centres

A variety of information centres have been established with Government support through OSTI or the Ministry of Technology and are likely to play an increasingly important part in the flow of information in the years to come.

To give librarians and information officers in other types of services an opportunity to assess the likely future impact and value of these centres, the Aslib Engineering Group is holding a one-day conference on the 15th May 1969 at the University of Aston in Birmingham. After papers on the general pattern of the centres and the services offered by a representative selection, a series of short contributions on their likely impact will be given by speakers from information units and libraries of different types.

Further details are available from the Conference Secretary, D. Whale, c/o Tube Investments Department of Technical Information, Rocky Lane, Aston, Birmingham 6.

Computer Study at Birmingham

The Office for Scientific and Technical Information has recently awarded a grant of £4,900 to the library of the University of Aston for an eighteen months' feasibility study into the co-operative use of the new BNB experimental service. The study will be carried out in conjunction with OSTI's Documentation Processing Centre in Manchester.

Birmingham University Library and Birmingham Public Libraries are co-operating and a working team is already studying problems of compatibility between the libraries' own catalogues and the MARC format. Methods of integrating local catalogue information with that recorded on the MARC tapes will also be investigated.

It is expected that the study may lead to a common form of catalogue in all three libraries, making information about their total resources more easily available to readers in the area, and paving the way to other forms of co-operation, such as acquisitions.

National Central Library

NATIONAL CENTRAL LIBRARY. Fifty-second annual report of the Executive Committee for the year ending 31st March 1968.

The year under review was marked by important developments which may have considerable impact on the future of the NCL. In June 1967 the Parry Committee, in their report on University Libraries, proposed the establishment of a National Library whose functions would include those at present carried out by the NCL. In the autumn of 1967, in response to a request from the Secretary of State for Education and Science, the trustees submitted a detailed survey of the scope and functions of the library, which took into consideration the proposals made in the Parry Report, and towards the end of the year the trustees were invited to submit evidence, to the Committee on National Libraries (the Dainton Committee), on the organization and services of the NCL.

In order to prepare the detailed evidence required, a number of researches and investigations were carried out, and although these are not presented in detail, some of the results are noted along with the statistical returns normally included.

The report records a small but continuing increase in the number of loan applications received. In general, the overall delay in dealing with requests has been reduced, partly because the number of items lent from the library's own stock is increasing. The comment is made that 'the number of forms returned for correction and additional information increased, reflecting some deterioration in the standard of bibliographical verification carried out in libraries'. Coupled with evidence from other sources, this may suggest that standards of in-training and supervision are not entirely adequate in many libraries.

A modest increase in grant-in-aid from the Department of Education and Science is reported, but, probably because of increasing costs, the number of books purchased remains very much at the previous level and falls far short of that which is desirable if a really effective loan service is to be provided. This is only one of the many problems which have necessitated an urgent re-examination of the organization and functions of the national libraries and hence the setting up of the Dainton Committee, whose report is now awaited with more than passing interest by librarians in this country.

Supply and Training of Librarians

An estimate of the numbers of qualified librarians likely to be required in the foreseeable future is contained in *A report on the supply and training of librarians* (HMSO, 6*s* 6*d*), a joint report of the Library Advisory Councils for England

and Wales published in December 1968. The report, on the supply and training of librarians, also examines existing education and training arrangements and makes a number of recommendations. The Councils estimate that the annual demand for qualified librarians is likely to increase from about 1,100 in 1968 to about 1,500 by 1980, subsequently declining slightly. During the two years the review was in progress, however, there has been such rapid development of facilities for training librarians that enrolments during 1968–9 may result in an output of 1,400 qualified librarians by 1971, and may prove slightly in excess of demand. The Councils therefore suggest that there should now be a period of consolidation, in which the emphasis should be on qualitative rather than quantitative improvement, including an increase in the proportion of graduate librarians within the total. They also advocate limiting basic education to essential requirements, improving the general educational content of the courses and the arrangements for practical training in libraries, and they encourage librarians to continue their studies throughout their careers by attendance at advanced courses and by other means.

The Councils suggest there is a need for improved machinery for co-ordination in this field, perhaps through the establishment of a standing conference. Meanwhile they have asked the joint committee responsible for the study to remain in being and to keep under review policy regarding the supply and training of librarians and information officers.

The report also stresses the need to increase the number of librarians qualified to undertake scientific and technical library and information work.

Indexing Languages

A one-day symposium on indexing languages will be held on 26th March 1969 from 9.30 a.m. to 5 p.m. at Ealing Technical College.

Topics will include practical problems and experience in the use of UDC, facetted classification, and post-co-ordinate indexing (by optical coincidence and by computer).

The fee (to include preprints) will be £4.

Further information may be obtained from Mr J. Burkett, School of Librarianship, Ealing Technical College, St Mary's Road, Ealing, W5.

Directory of Short Courses in Librarianship and Information Work

The *Directory of short courses* issued periodically by OSTI is now published in the form of a 33-page booklet. It is available, as before, on request from the Office for Scientific and Technical Information, State House, High Holborn, London WC1.

Moving your library?

The Aslib Library is currently receiving requests for advice and information from members who are planning removals of their libraries, either from one floor to another, from one building to another adjacent to it, or from their present location to completely new, and sometimes distant, premises. A little has been published on the subject, giving general advice on the moving of stock, but it would be useful to have in our files comments from anyone who has recently moved, giving such details as firms employed, problems encountered, time taken, helpful tips and so on. This information could then be made available for members who are making preliminary removal plans.

Contributions should be addressed to the Aslib Library.

Scottish Branch

The next evening meeting of the Aslib Scottish Branch will be held at 6.15 p.m. (for 7 p.m.) on Wednesday, 12th February, 1969, at the University of Strathclyde, Glasgow. The speaker will be Mr. L. J. Anthony, Assistant Director (Services), Aslib, who will talk about present and future developments in Aslib.

FID Conference, 1968

The invasion of Czechoslovakia in August 1968 made it impractical for the International Federation for Documentation (FID) to hold its 34th conference and world congress on documentation in Moscow in September. Instead, alternative arrangements were made to ensure that the essential business of the Federation was not held up, and the General Assembly, Council, Executive Committee and certain of the Study Committees met at FID headquarters in The Hague during the first week in December. Various ideas had been explored in the meantime for holding the postponed world congress early in 1969, but as none of these had come to fruition the General Assembly decided to abandon the congress, and the papers which had been submitted will now—provided the authors agree—be published as they stand on behalf of the FID by the All Union Institute of Scientific and Technical Information (VINITI), Moscow.

In opening the General Assembly, the President (Mr K. Lowry, USA) pointed out that during the past three years, the number of National Member countries (forty-six) had increased by 30 per cent; the structure of the Federation had been thoroughly revised; a new programme of work embracing several fields not previously covered had been elaborated; the headquarters administration and finances had been overhauled and put on a sound basis with a staff of ten and an annual income of over Fl.400,000 (£46,000). As part of the review of the organization's structure, machinery had been created for systematic examination of the programmes of the study committees and for allocating financial support to them; these study committees—concerned with information for industry, training of documentalists, aid to developing countries, mechanized information systems, linguistics in documentation, information theory, classification research and the UDC—are the principal foci of continuing work in the FID and their success depends largely on the effort put into them by National Members.

New National Members admitted at The Hague were Colombia, Nigeria and the German Democratic Republic. The new officers elected were: President: Dr R. McBurney, National Research Council, Canada; Vice-Presidents: Professor H. Arntz (Germany) and Professor A. Mikhailov (USSR); Elected Members of Council (four vacancies): Mr J. Brown (Canada), Mr L. Jansky (Hungary), Dr H. Ootuka (Japan) and Mr K. Stenstadvold (Norway). The Director of Aslib remains in office as Treasurer of FID until 1970.

The next full conference and congress are to be held in 1970 and invitations were extended for them to be held in Argentina, India and Italy. As the 10th Anniversary of the formation of the Latin-American Commission of FID occurs in 1970, the Argentinian invitation was accepted.

Particulars of the current programmes of work of the FID Study Committees may be obtained from the Secretary-General, FID, 7 Hofweg, The Hague, Netherlands.

OSTI grant to Aslib

Most members will know that Aslib has been in receipt of Government grants, almost invariably related to the amount received each year from membership subscriptions, since 1944. The current five-year grant period—the last to be authorised by DSIR before its dissolution—ended on 31st December 1968, and new terms have just been agreed for the three years ending 31st December 1971 with the Office for Scientific and Technical Information (OSTI) which assumed responsibility for grant-aid to Aslib when DSIR closed down.

The new terms broadly follow the established pattern and, in line with the previous terms, tend in the direction of expecting Aslib's membership services increasingly to pay their own way whilst recognizing that research is likely to require more substantial subsidies. The essence of the new arrangement is that for every £1 raised by Aslib—which can consist of membership subscriptions or contributions towards the cost of Aslib's research programme—the Government will give 14*s* for research and 6*s* 8*d* (reducing to 6*s* 4*d* in 1970 and 6*s* in 1971) for Aslib's general activities. These grants will only be forthcoming if Aslib raises a minimum of £50,000 p.a. and there will be a ceiling of £65,000 p.a.

The Council believes that these terms are reasonable and that they present a fair challenge to Aslib to increase its income and so extend the scope of its usefulness to the membership still further. How this can best be done will be the subject of urgent study by the Council early in the New Year. Meanwhile, the financial estimates for 1969 approved by the Council show an expected income of £191,050 of which £77,170 will be earned from the sale of publications and other services. Research contributions and membership subscriptions (of which only those coming from UK sources earn Government grant) are budgeted at £61,180 and Government grants at £52,700.

A Happy New Year to Aslib Members

On behalf of the Council and the staff, the Director wishes all members of Aslib a very happy New Year.

THE 'SHEFFIELD REPORT'

W. L. SAUNDERS

Professor and Director, School of Library and Information Science, Sheffield University

Paper presented at the 42nd Aslib Annual Conference, Canterbury, 22nd–25th September 1968

THE background to the 'Sheffield Report' on *Education and training for scientific and technological library and information work* is probably well known to most members of this audience, for many of you have contributed to it by answering our questionnaires and letters, by allowing us to visit your units and by submitting your views on various aspects of our inquiry. The scope of the report is, I hope, clear from its title. Its *raison d'être* can be found in the results of the OSTI survey of staff employed in scientific information work, carried out by Mr A. P. J. Edwards and published in 1966.

The OSTI survey revealed many gaps and deficiencies in educational and training facilities for science-information work. It also revealed a lack of firm information on what the content of such training should be, at various levels. Most significant of all, perhaps it revealed the need for an integrated educational and training policy for scientific information and library work, to meet present and future needs. In mid-1966 OSTI placed a contract with the Sheffield School to make a comprehensive study of the form and content of education and training requirements for work at all levels in scientific and technological libraries and information departments. The results of our investigations, which covered an eighteen months period, are embodied in the quite substantial report which we submitted to OSTI in January of this year and which is to be published by HMSO.

We took it as axiomatic that education and training must be geared to the needs—present and potential—of the great variety of units in which scientific library and information work is carried out, and much of our time was devoted to investigating the characteristics and activities of science-information* units of all types. Part I of our report is, in fact, a survey of science-information work as carried out in the various types of industrial unit, in universities, technical colleges and public technical libraries, with particular emphasis on the qualifications of staff and the sort of work carried out by them. It is based on visits to nearly 100 libraries, information units and schools of library and information science both at home and overseas, and on questionnaires and correspondence. In all we have been in touch with more than 1,000 individuals and organizations and we have reason to be particularly grateful for the co-operation of colleagues—including, of course, many members of Aslib—in all parts of the world.

Many interesting facts emerge from Part I of the report. For example, the concentration of a high proportion of all industrial information staff in relatively few large units; the move in university libraries away from a passive, custodial approach towards the provision of more direct and positive service; the range and importance of the work carried out in public technical libraries under very difficult staffing conditions. At a more general level: the great importance attached in units of all types to personality characteristics, the recognition of increasing mobility between different types of library and information units, and the importance of recognizing the essential unity of library and information work.

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* This term includes both libraries and information departments.

When we came to translate into terms of education and training the activities and needs revealed in Part I of our report, we concluded that science-information work gave scope for four categories of work: Production, Development, Applied Research and Background Research. I will say no more about these, as Mr Schur will mention them in his paper, but I would emphasize the importance which we attach to systematic and continuing research and development in the science-information field. We consider it to be just as significant, just as necessary, for science-information units as for the organizations which they serve.

To meet the needs of the four categories of work which I have mentioned, we recommend five types of course:

1 Assistant, technical.
2 Non-graduate professional.
3 Graduate professional information technologist.
4 Postgraduate professional.
5 Advanced professional.

These do not match the four categories of work on a one-to-one basis, of course. For example, postgraduate professionals may be involved in any one of the four categories, from production to background research.

The technical assistant course is at sub-professional level and we have in mind something along the lines of the City and Guilds Library Assistants' Certificate. At the other end of the spectrum we see a need for advanced professional courses, to give personnel with suitable qualifications and aptitudes the opportunity for research training and research degrees by thesis. Such courses are, in our view, pre-eminently suitable for university institutions, and we should like to see increasing association between the universities and industrial and other units, in carrying out research and research training in the science-information field.

Taking a realistic view of the general economic and educational context in which planning must be carried out, we concluded that the non-graduate professional, following a course of two years' duration, would continue to provide the mainstay of science-information work in the foreseeable future, and in our report we have given some attention to this type of course.

With the graduate professional information technologist we introduce a new concept, a bachelor's degree course in which information technology is the central, unifying discipline. I do not propose this morning to go into the proposed content of such a course or, indeed, of the other courses which I have mentioned; for this you would do best to read the report itself. It is, however, particularly gratifying to find that a course of the type we had in mind is about to be launched at Newcastle, and Mr Wilson, who has been largely responsible for the planning of this course, will be telling us about it this morning. A very interesting variation has emerged at Aberystwyth and Loughborough, where the library schools have allied themselves with their respective universities to produce a bachelor's degree course which combines scientific subjects with librarianship. We look forward to a joint presentation covering both of these courses, and it will be particularly interesting to compare their approach with that of Newcastle.

We saw the development of undergraduate courses as being accompanied by an increase in courses of the type we have described as postgraduate professional. By this we have in mind courses of training in information studies, of one year's duration or thereabouts, for graduates who have come up through the traditional scientific disciplines.

There is now enough substance in information studies to justify the award of a master's degree to the best of these science graduates, if they follow a really rigorous course at postgraduate level, and two universities, Sheffield and City, are now offering such courses. This seemed to me to be a development of sufficient significance to justify inclusion in this session on 'new developments', and we shall shortly be hearing about the MSc course at City University from Mr Farradane and about Sheffield University's MSc course from Mr Schur. I should mention that both of these universities have specialized for some years now in scientific information work and have developed courses specially tailored for the needs of science and technology graduates. Statistics show that they are both attracting graduates of very high academic quality and in this they have undoubtedly been helped by SRC recognition, which means that advanced course studentships are available for appropriately qualified students. Before leaving this topic I should perhaps make it clear that at Sheffield, in addition to the course which Mr Schur will describe, it is also possible to obtain an MSc or a PhD by thesis.

When we turned from considering levels of courses and looked at ways in which they should be organized and presented, we examined at some length the relative merits of full-time and part-time study, sandwich courses, short courses and courses which combine elements of full-time and private study.

We emerged with an unequivocal preference for the full-time, full-length course as the most effective, speedy and economic means of making a person professionally productive in science-information work. Nevertheless, we considered that a very convincing case could be made for a different route to professional qualification for genuinely 'mature' entrants to science-information work, people such as science or technology graduates who turn to this field after years of valuable experience in research and development. In such cases it is rarely reasonable or realistic to expect attendance at full-length, full-time courses, and we gave a great deal of thought to alternative methods of study, more appropriate for such situations. At the time when we were thinking along these lines the Library Association sub-committee which was considering a mature-entry route to professional qualification was just beginning its work. I was invited to attend the meetings of this sub-committee, and Mr Schur and I came to the conclusion that its proposals, which must be well known to members of this audience, would provide the sort of framework we had in mind for experienced science and technology graduates entering science-information work.

The Library Association proposals have had a temporary set-back, but I am convinced that the principle underlying them—qualification by attendance at approved short courses—is of very great long-term significance for professional education for science-information work. It was for this reason that I selected professional qualification by short courses as one of the three 'new developments' to be discussed this morning. Mr Richnell, as you will know, played a leading part in preparing the Library Association's proposals. He is also Aslib's Chairman of Council, and, as Chairman of its Education Committee, has been closely associated with Aslib's extremely important work in the presentation of short courses. It is particularly appropriate that he should deal with the topic of professional qualification by short courses and I am very grateful to him for agreeing to contribute to this session.

I have been dealing, very briefly, with aspects of the 'Sheffield Report' which are particularly relevant to this morning's papers. There are other matters—some of considerable significance—which time precludes my mentioning in detail: the need for a staff college for future leaders in our field; the shortage of teachers; the need to increase the number of competent translators and interpreters; the desirability of expanding the university schools, which are well below optimum size, the need for a more systematic approach to providing pre-course practical experience. For discussion of these, and many other important topics, I can only refer you to the full report.

DEVELOPMENT IN EDUCATION LEADING TO FORMAL QUALIFICATION

D. T. RICHNELL
Goldsmiths Librarian, University of London Library

Paper presented at the 42nd Aslib Annual Conference, Canterbury, 22nd–25th September 1968

THE developments in education in librarianship and information science in the last five years have been remarkable. They stem partly from the general development of higher education, and partly from the growing realization of the importance of library and information work in our present and future society. The introduction of the 1964 syllabus of the Library Association, and subsequently the postgraduate syllabus, was a landmark. Whatever criticisms may be made of these syllabuses, they placed education for librarianship firmly on a full-time basis for the first time, and led to the rapid expansion and improvement of the library schools. My own experience as an examiner for the Library Association convinces me of the marked raising of standards that has resulted. A measure of internal examining has been introduced, and this is likely to be extended, thereby providing for a much greater flexibility in teaching and course work.

The development of the university postgraduate school has been equally striking. The number of such schools has increased and the consequent increase in the intake of graduates intending to enter the field of library and information work is gratifying. The postgraduate diploma appears to be on the way to conversion into a master's degree, and it is possible that this may prove more attractive to students—although it does not necessarily affect the standard of the courses.

The question of a first degree in librarianship and information science is no longer a matter for discussion only. *Aslib Proceedings* May 1968 gives some details of three new courses, each with a different structure, leading to first degrees, in addition to the three-year course leading to a BA degree with librarianship as the first principal subject instituted at the University of Strathclyde. The degree course at Newcastle College of Commerce leads to a CNAA BSc degree in information science, and other library schools are putting forward projects for similar CNAA degree courses.

All university postgraduate schools of librarianship will accept suitable students for registration for higher degrees in librarianship and information science, and the City University is offering an MSc course in information science for graduates with first degrees in other suitable subjects. There are as yet not a great number of students receiving research training in this field. The existence, however, of university and other schools conducting first degree and higher degree work is having some, and is likely to have a greater, effect in diverting students to an interest in information work; and, what is especially important, in influencing other departments to treat information science and the use of scientific literature as an integral part of the teaching in their own disciplines. This could in its turn provide a valuable heightening of interest among students, useful in itself, and leading to the enlargement of the field of recruitment to librarianship and information work.

The rapidity and scale of these educational developments has led to some misgiving about the possibility of overproduction of qualified practitioners. The Library Advisory Councils for England and Wales have undertaken a survey on the supply and training of librarians with a view to determining the likely future needs and the likely supply to match the needs. Since their report has not yet been published, I cannot give an account of the findings in any detail. Whilst remaining a sceptic about the possibility of producing an estimate of needs that is more than a reasonable guess, I accept the evidence that a rough equilibrium is being achieved between the need and supply for the next few years.

The equilibrium remains, however, a general one. There is no guarantee that the need for librarians and information scientists with other specialized qualifications will correspond with the supply. Although there has been some improvement, for example, in the number of science graduates entering the profession, the number is still insufficient for the likely requirements. Even if the advantageous effects of present educational developments which I have forecast are felt, there is likely to remain a demand for librarians and information workers with scientific, technological and other specialized qualifications which can only be met by recruitment of those without formal professional education and qualifications, many of whom will enter library and information work at a relatively mature age.

Even if it is agreed that the means available for the formal professional education of young specialists are now greatly improved, the same cannot be said as yet for mature entrants, and particularly for those already engaged in full-time library and information work. The report of the Library Association's Committee on Scientific Library Services, on which Aslib was represented, has summarized the essential points thus:

> 'A very substantial proportion of senior graduates enter library work at a relatively "mature" age, after experience in other forms of scientific work and often by transfer from other departments in an organization. Their enthusiasm for lengthy training in library techniques is limited and their main loyalties are to their subject and their firm. Nor do employers favour lengthy release for full-time courses. The OSTI survey showed that the vast majority would be willing to allow for day-release classes or for short courses. Few would be willing to grant a year's leave of absence, and it is not practical to expect a man in his 30s, very likely with family commitments, to subsist on the grants available from state or LEA sources.' (3.17)
>
> 'OSTI has recently completed a national survey of staff employed on scientific and technical information work. One of the deductions from this survey is that the number of science and engineering graduates employed full-time or part-time in these libraries and information departments is of the order of 1,000. But of these only 2–3 per cent have also a Library Association qualification.' (13.12)

> 'Of some 7,000 Chartered Librarians on the Library Association Register (1965), only between 1 and 2 per cent are graduates in science.' (3.11)

Even allowing for the fact that the possession of the Library Association qualification is not the only concrete evidence of formal professional education, the picture presented remains substantially true, and is one of great concern. Aslib has, of course, for many years understood the need for providing for the professional education of such persons, and its education programme has been in part directed towards filling the gap. But the opportunities provided by Aslib for formal education have been sporadic and incomplete, and those attending Aslib courses have not been able to receive the benefit of any recognized qualification as a direct result. Even if we all agree that what is important is the educational process rather than the resultant qualification, the facts remain that those who undergo professional education are more likely to do so systematically with formal qualification as a goal, and that some form of certification is the only guarantee that an acceptable all-round standard has been reached.

Clearly some form of part-time study leading to qualification is required. I said earlier that one of the achievements of the 1964 syllabus of the Library Association was that it placed professional education firmly on a full-time basis. There should be no suggestion of a return to the former methods of part-time training, and full-time education should remain the route to qualification for all young entrants. This does not rule out the possibility of new forms of part-time education for mature entrants, and these new forms could be various. There is the possibility of part-time work for higher degrees, or for CNAA degrees; the Institute of Information Scientists may well expand its activities in support of part-time education; and new forms of evening and day-release study may emerge. But the distinctive contribution that I would wish to see the Library Association make, in close association with Aslib and other bodies, is the provision of a qualification for mature graduate entrants based on intensive short courses, of the type which Aslib often provides.

Now it is not, I think, unknown that such a scheme has been formulated. The Scientific Library Services Committee, while preparing their report, referred this matter to the Association's Education Committee as a matter of urgency. After nearly two years' work a scheme was prepared by a Mature Entry Sub-Committee of which I was Chairman. I do not wish to claim all the credit for this scheme—or blame, if that is the way you look at it—since Mr Liebesny, at that time Chairman of Aslib Education Committee, was a member of the Sub-Committee, and, amongst others, Mr Dudley, Head of the North-Western Polytechnic School of Librarianship. Mr Saunders was closely associated with the work and made a most valuable contribution, and the Department of Education and Science and OSTI were consulted and gave support to the preparation of the scheme, which is intended to apply to mature graduate entrants coming into library and information work by virtue of specialist qualification in all types of library, national, academic and public, as well as scientific and industrial.

I think it is an important and imaginative scheme, and I am supported in this view by the opinions of a number of educationists expert in fields other than librarianship. The scheme was approved by the Education Committee and the Council of the Library Association, but the consequential amendment to the Bye-Laws did not command the necessary two-thirds majority at the Annual General Meeting in May. Most of those who succeeded in blocking implementation said that they did not oppose mature graduate entry in principle but thought the scheme was a bad one—a 'soft option'. I regard this view as entirely ill-founded, but for the present the scheme remains a scheme only. As such, it should be further discussed. It was published in the *Library Association Record* in December 1967, but I will attempt to give some account of it here.

The first thing to remember is that it is designed not for young students but for those already engaged in library and information work, and possessing subject specialist qualifications. They would, therefore, be capable of benefiting from intensive course work and of undertaking private study without constant supervision. In order to ensure that it did not conflict with normal entry by way of full-time professional education, the age at which candidates could enrol for qualification by mature graduate entry was proposed as 27, with eventual qualification at not less than 30. Those enrolling would have to be engaged in full-time library and information work in a responsible senior post (although this is difficult to define with precision) and possess a first degree or its equivalent.

Candidates would be expected to attend approved short courses as the basis of their studies, the kind of short courses that employers might be expected to be willing to release staff to attend, and would accumulate credits based on, but not solely dependent on, course attendance. Thirty credits would be needed for qualification as a rough equivalence to thirty weeks of term-time in a postgraduate school. (Vacations are discounted, since candidates would be accumulating practical experience in their jobs.) Short intensive courses would be approved by a Board of Admissions and given a credit-rating. But no credits would be awarded for mere attendance at courses.

Courses would be reckoned as occupying only 50 per cent of the time of study. Fifty per cent would be for private study and the production of written work approved by the Board of Admissions. And, subject to satisfactory course attendance, credits would only be awarded on the written papers submitted afterwards. These written papers would be of the type which might be deemed worthy of publication—in the case of the best of them. This would ensure the maintenance of quality and standards, which would be further underwritten by viva voce examination, where the Board of Admissions required it.

The next point would be to ensure that candidates receive a broadly based professional education. This is written into the scheme: 'The Board will need to be satisfied that the candidate has reasonably covered the areas of (*a*) organization of knowledge, (*b*) bibliographical organization, and (*c*) management.' No formal syllabus is laid down, and this ensures that candidates can attend the courses which they and their employers deem most useful to their work, so long as the necessary range of studies is maintained. Such flexibility is entirely consonant with coherence for the mature student, and, indeed, similar flexibility may well be desirable for all students. Standards could be safeguarded by the Board of Admissions.

No maximum length was prescribed for courses and it would be unnecessary; but a minimum was thought essential. The Mature Entry Sub-Committee ruled out week-end courses, and laid down three full days as the minimum. Those with experience of intensive courses will support the view that much can be done in three full days, and it is the appropriate period for certain subjects. Such a course with private study and written work would earn one credit. This seems reasonable, particularly in view of the fact that any candidate choosing a lot of three-day courses would, in fact, be doing it the hard way, since a week's course would normally be reckoned as five days. Most short courses vary between three days and three weeks.

Candidates on enrolment could be given a certain number (in no circumstances more than 10) of 'initial credits' by way of exemption from some course work. Exemptions would be for a variety of qualifications—subject bibliographical knowledge, training in cognate subjects such as computer programming or systems analysis, practical experience over years in a senior post, language knowledge. In general, the principle underlying the award of initial credits is that if a candidate is already qualified in certain fields of direct relevance to library and information work he should not have to qualify again. Provided enough requirement remains for basic course work and study, this is surely common sense. It may be that in the scheme as outlined too much emphasis was placed on, for example, language skills (as Mr Schur and Mr Saunders thought), but this is a matter for further detailed discussion and not one of principle.

The scheme is much more complex and refined than this bald outline suggests. It is greatly to be hoped that after further discussion and modification the Library Association will decide to implement it. I am hopeful that it will, and I should, therefore, not wish to discuss what might, or should, happen if it does not. The delay is regrettable, but, of course, the absence of a means for formal qualification by short courses in no way lessens the need for the provision of short courses for many other purposes. Aslib is extending the range of its provision, and OSTI has established a Committee on Short Courses in Librarianship and Information Work. The objects of this Committee are to publish a directory of short courses at regular intervals (three have already appeared), so that the full range of what is being done is widely known; and to stimulate the establishment of other short courses where the provision is inadequate.

The courses now being provided cover a wide spectrum both of subjects and of levels. Some are essentially basic training courses for junior and for comparatively senior staff. Some are of the type envisaged for mature graduate entrants, and some are designed essentially for established practitioners—some would be suitable for both. The time has clearly come for the great extension of the range of courses of the last kind. There is an ever-growing need for continuous education for us all, call it retraining, refresher course work, extension of education to new fields, or what you will. Aslib has a very important role to play here, and every effort should be made to increase the range of courses it supplies itself, or stimulates others to provide.

THE BSc DEGREE IN INFORMATION SCIENCE AT NEWCASTLE UPON TYNE

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Paper presented at the 42nd Aslib Annual Conference, Canterbury, 22nd–25th September 1968

INTRODUCTION

> 'A peculiarity of the study of (Information Science) is its lack of demarcations: sooner or later the student of (Information Science) finds himself wandering into fields that are occupied by other sciences. The practical difficulty of drawing a dividing-line between the legitimate scope of (Information Science) and that of other studies is so great that we are often told there is no science of (Information). This lack of definiteness adds a charm to the subject and is fertile in the production of new idea, for it is at the fringe of a science that originality has its scope.'

THESE, unfortunately, are not my words but those of Dr A. C. Haddon delivered in an address in 1903 to the Anthropological Institute of Great Britain and Ireland. The word which should occupy the space taken by 'Information Science' is of course 'anthropology' but the fitness of the words for the present condition is so obvious that I would not resist the temptation to mutilate them. Equally fitting are his subsequent words, which I will leave unaltered:

> 'It may be logically consistent to distribute portions of Anthropology among other sciences, but the result would be that the subject would suffer, and . . . it would be developed very unequally. Indeed, to be quite candid there is very little direction in the evolution of Anthropology, or in the study of its branches.'*

Knowing how suitable these quotations are you will no doubt think it presumptuous of us to offer an undergraduate course in Information Science, and, hopefully, you will be intrigued to know what we are going to teach and how we are going to teach it.

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* Both quotations are from vol. 23 of *Journal of the Anthropological Institute of GB and Ireland*, and are cited by R Flint in *Philosophy as scienta scientiarum, and a history of classifications of the sciences*. Blackwood, 1904 p. 329–30.

BASIS OF THE COURSE

The syllabus for the course will answer the first of these questions:

First Year

1.1 Introduction to the information sciences: a state-of-the-art survey undertaken on a seminar basis and designed to give the student an insight into the diverse nature of the information sciences.
1.2 Organization of knowledge I: intended to lead to an understanding of what is meant by 'the field of knowledge', of the methods and problems of scientific investigation, and of the bibliographical problems created by the growth and diversification of recorded knowledge.
1.3 Social factors and documentation: a consideration of the psychological and sociological background to an individual, or groups of individuals, seeking or producing information.
1.4 Mathematics I: to provide a mathematical background suitable for information science and to assist with pure science and engineering studies.
1.5 Basic science I: to acquaint students with the fundamental vocabulary, concepts, methodology, techniques and some applications of physical and chemical sciences.
1.6 Foreign language: to help the student acquire a basic reading knowledge of a foreign language with emphasis upon scientific and technical vocabulary.
1.7 Development of science and technology I: a survey of the historical development of science and technology with due attention to social and economic changes.

Second Year

2.1 Organization of knowledge II: a continuation of course 1.2 with special reference to practical methods of information handling through classification, cataloguing, and indexing.
2.2 Bibliography of, and information problems in, science and technology: sources of bibliographic information and general data in science and technology; identification of some problems in information work.
2.3 Report writing and editing: intended to give the student a general understanding of the presentation of technical information, and to provide him with the necessary reporting and editing skills.
2.4 Mathematics II: a continuation of course no. 1.4.
2.5 Basic science II: a continuation of course no. 1.5.
2.6 Development of science and technology II: a continuation of course no. 1.7.
2.7 Short courses: Graphics, and Research methods in Information Science.

Third Year

A practical year spent in libraries and information centres.

Fourth Year

4.1 Information storage and retrieval: a theoretical and practical study of modern methods of organizing information for retrieval, including the application of computers.

4.2 Bibliography of, and information problems in, main academic subject: a continuation of course no. 2.2.

4.3 Data processing: to introduce the student to the basic principles of systems analysis and to the possibilities of electronic data processing machines in library and information department operations.

4.4 Management and its applications in information centres: to provide a framework of management theory illustrated by reference to libraries and information centres, and by comparison with formal organizations of all kinds.

4.5 Physical or engineering sciences: a continuation of course no. 2.5 with students opting for either Advanced physical sciences, or Engineering sciences.

4.6 Project: to enable the student to display his ability to pursue a subject in depth, drawing, where possible, upon different areas of study from within the course.

You may be interested to know why we have adopted this particular combination of subjects. We started with the basic assumption that the major demand for information workers is in the fields of science and technology and the entire presentation of the degree to the CNAA centred on the estimates of demand for information workers made by Mr A. P. J. Edwards of OSTI.* From this we moved to a consideration of the required subject content of the course, and this evolved from an examination of what we, at least, consider to be the 'core subjects' in information work, i.e.

A The sociological and psychological basis of information and its communication;

B The organization of information: including a theoretical study of the nature of information and its value for organizations of all kinds, as well as bibliographic organization;

C The study of science and technology together with a study of the bibliographical control of its literature.

Since drawing up the first draft of the course our ideas, naturally, have changed through interaction with lecturers in other disciplines, e.g. what had been thought of as a one-year course on the development of the media of scientific communication and bibliographical control became a two-year course on the development of science and technology which includes these concepts in a more comprehensive view. Similarly, the 'Social factors and documentation' course acquired a much greater bias towards a theoretical study of social psychology with an emphasis upon those factors affecting communication.

This process continues, as discussions on the content of courses, their interrelationships, and teaching methods take place; indeed, it is highly desirable that this should be the case.

ORGANIZATION OF THE COURSE

The course is a four-year 'thick' sandwich course, with the entire third year spent in practical work. The reason for this lies in the largely theoretical nature of the college-based work and the belief that practical work periods during vacations would be very unsatisfactory; indeed it seems to be a principle of CNAA that vacations should be free for other purposes. More will be said about the training year later.

The administrative organization of the course is divided as follows:

A Academic matters: in the hands of a Board of Studies, as are other courses in the Department of Librarianship. These Boards have only recently been established but the following is an initial draft of the duties of the Information Science Board:
  1 Critical assessment and annual review of the course;
  2 Co-ordination of teaching;
  3 Review of academic progress and welfare of students;
  4 Discussion of matters relating to the selection of students.
  The Board will include the elected representatives of the student body.

B Examinations: the responsibility of the Board of Examiners, which includes the external examiners for the course.

C Day-to-day administration, timetables, organizing interviews etc: departmental administration under the Head of Department.

The teaching is organized largely on a team teaching basis, e.g. three people are involved in the 'Development of science and technology' course in the first year, two in 'Social factors and documentation'. In other cases, largely because of their experimental nature, a single lecturer is involved throughout the course.

We are also very much aware that in initiating a course of this nature we must draw upon as wide a range of experience and talent as possible. To this end we will make a feature of regular seminar sessions involving visiting lecturers. Indeed the entire first-year course on 'Introduction to the information sciences' is planned on this basis.

This year we have added two members of staff to the department specifically for this course, one a librarian with experience of special libraries, the other a member of the IIS with long experience of industrial information work. In the succeeding years of the course we will add further members of staff.

PRACTICAL TRAINING YEAR

With the emphasis upon theory in this course it was felt necessary, since the degree is, in this stage of its history, a vocational degree, to devote a full year to practical training. During the next few months we will be holding intensive discussions with industrial and other special librarians in order to arrive at a mutually satisfactory pattern of training. As a preliminary to this we have prepared a statement of our own ideas on how this year should be organized. The management of this aspect of the course will be chiefly in the hands of a newly appointed Training and Liaison Officer:

1 The period of practical work should occupy a period of twelve months between the end of the summer term in the second year and the beginning of the autumn term of the final year.
2 The final details of organization must be left for discussions between the

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* EDWARDS, A. P. J. A national survey of staff employed on scientific and technical information work. *J. Doc.*, **22**, (3), Sept. 1966. 201–44.

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organizations concerned and the College, but the following broad framework is desirable:

(*a*) a period of work within the organization, but *outside* the library/information service;

(*b*) a period of work within the library/information service.

The work-period (i.e. (*a*) above) should come first and is intended to help the student acquire some information about the organization—its main functions, its management structure, channels of communication, etc. The emphasis should be on gaining some insight into probable information demands. There would be no objection to splitting this period into two parts, i.e. a period before, and a period after or during the work in the library/information service.

3 Library work. In his period of practical work the student should come into contact with all aspects of the work of the department. In order to reveal his knowledge of this work, the student will be required to complete a report covering the general themes of:

(*a*) structure: i.e. the structure of the organization as a whole, the structure of the information service, the influence of both on the kind of information needs and information demands;

(*b*) resources: i.e. a study of the available resources of the information department, in terms of stock and staff, and including co-operation with other organizations;

(*c*) services: i.e. a study of the services offered by the department, their range, audience, and efficacy.

4 Visits. Students will be visited by members of the Department at least four times during their year of practical work. Provision will be made for further visits to individual students if there is some need for it, e.g. study problems.

5 Residential week-end: A residential week-end course may be held mid-way through the third year so that students can exchange information with each other and discuss their work with the lecturers.

FUTURE DEVELOPMENT

I said earlier that as the course has developed our views have changed on the content of courses; this is particularly the case in relation to the Social Sciences option to the course that we mooted at the outset of our planning. Originally this was seen as more or less parallel to the science option with a first-year course as follows:

1.1 Introduction to the information sciences
1.2 Organization of knowledge 1
1.3 Economics 1
1.4 Politics 1
1.5 Elements of social structure 1
1.6 Foreign language 1 or Mathematics 1

This now appears to be an almost antediluvian conception because it has become more and more apparent that, if information science is to develop, there must be an even more integrated approach to first degree courses, to such an extent that we hope to base the new social science option in a broad study of sociology with an emphasis upon how social structures shape the patterns of the communication of information. Out of this will come a specialization in various aspects of sociology and the relationships of these aspects to information.

A further development, though this is not in the near future, is a Master's Degree in Information Science. I estimate that this would be established perhaps in five years' time; by that time we will have had experience of two full first degree courses and one can guess that by this time such a higher degree will take a rather different form to any which I could outline now and to any which is currently being offered. One factor which will affect the speed with which development can take place is the amount and quality of research which we can undertake. At present there is very little, but with the development in Newcastle of the Polytechnic we might expect that research effort will increase fairly rapidly.

CONCLUSION

This paper is, inevitably, a report upon progress to date. This is essential if the profession at large is to be made aware of our intentions and hopes, but for the writer, having lived with the development of the course for about three years, it is less than satisfactory. Two things are now of interest to us: teaching the programmes we have devised and looking forward to the evolution of the course. I trust that this is also now of interest to this paper's audience.

UNIVERSITY OF SHEFFIELD
MSc COURSE IN INFORMATION STUDIES

HERBERT SCHUR
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Paper presented at the 42nd Aslib Annual Conference, Canterbury, 22nd–25th September 1968

IN this brief paper outlining the new MSc course in Information Studies, I propose to consider five questions:

1 What is the aim of the course and what is its content?
2 Who are to be the students?
3 When, in the student's career, is the course to take place?
4 Where is the course to take place? and
5 How is the course to be run?

In each case I will also touch on the problem of 'why?', since this is the question which so often is not considered at all in the 'how-we-run-our-course-good' type of paper.

THE AIMS

In the study of the *Education and training requirements for scientific and technological library and information work*[1] we discerned four main categories of work which, in industrial terms, could be described as follows:

1 Production
2 Development and design
3 Applied research, and
4 Background research.

I should like to amplify this.

Production: For our purpose this means the day-to-day operation of a science information unit including both special library and information work. At present the overwhelming majority of staff in these units is engaged in production-type activities at all levels of qualification and experience. At the highest level the work will include the direction of large and of sophisticated science information units, and, in some cases, of individual work at an advanced level requiring considerable knowledge and expertise both in the relevant subject matter and of information science and technology.

Development and design: This type of activity is concerned with adapting the store of existing knowledge to the particular circumstances in a science information unit. It includes systems analysis and design of a library, information unit, or part of a unit, or of particular operations. Examples of this type of activity include the development of a 'chemical typewriter' for the recording and automatic typing of chemical structural formulae, the adaptation of mail-order store techniques in the National Lending Library for Science and Technology, the design and development of special purpose classification systems, or development in computer application in science information work.

Applied research: This would include such activities as the application of new discoveries for information purposes, so as to yield a product, process or service with useful characteristics at an economic cost. Examples would include research on applications of holography for IR, and of other storage devices, the study of new classification and indexing systems, studies of user needs and behaviour in terms of levels of information, ease of access to this information and the information channels used, to mention just a few technological and behavioural problems. Applied research is intermediate between background research and design and development work.

Background research: This would include the study of topics such as the information transfer process, the dissemination of innovation, the role of information in scientific research, production, and productivity, the fundamental principles of indexing and classification, and other topics potentially relevant to applied research in information work.

THE COURSE

As I see it, there is need in a course in information studies for good science, technology, or engineering graduates, to bear in mind the needs of both the 'production' and the 'R&D' categories of work, and at the same time to ensure that every student will be in the possession of a common background of knowledge. This we aim at providing by means of a common 'core' element in the course which sets out to form the basis for specialization later in the course in either direction, through special options in management and R&D topics, and by encouraging the student to develop his or her particular interests still further in the 'special study'.

After considerable discussion we concluded that most of the topics which we felt should be included in the MSc course could be included under only three main headings:

1 Generation and use of information
2 Information resources, and
3 Communication of information.

Under the first head, we aim at presenting the general background to the *generation and use of information,* with special emphasis, though not exclusively so, on scientific and technological communities. Taking a simple breakdown into industrial, governmental and academic communities, the organizational and behavioural patterns are considered both in different disciplines and in different types of work, such as work in pure research or development work. The study of the generation and use of information in industry includes also a consideration of topics such as the structure of industry, its problems of organization, efficiency and economics, leading on to a consideration of R&D in private and nationalized industry, research associations, and independent research organizations. It is, in my view, important for the science information worker to be aware of some of the problems facing management in industry, not only because this is very useful 'background' knowledge but because I, for one, would hope that more science information workers will reach senior management positions, and end up 'on top' and not just 'on tap'. The type of material I have in mind is represented by writings of J. R. Bright, C. F. Carter, D. Davies, R. L. Meier, B. R. Williams, and J. Woodward, to mention just a few authors. A study will also be made of the dissemination of innovation and role of invention, represented by research such as that by E. M. Rogers and J. Schmookler. Next comes a consideration of communities in government departments and establishments, with work ranging from pure science at one end to industrial production work at the other, and from the men in the ministry to those working in research and field laboratories and stations in this country and overseas. The academic communities, including the professional and learned bodies, are the next topic, and, here again, the generation and use of information is considered, compared and contrasted with that in the other types of community. The treatment is not purely descriptive, since the whole purpose of a course at this level is to provoke thought and constructive discussion. Studies such as those by D. Garvey, B. C. Griffith, W. J. Paisley, and M. Slater will be considered here.

The second head, *information resources,* includes both the specialized ones in science and technology and the basic general resources. Following the introduction to general resources, such as bibliographies of bibliographies, encylopaedias, various general handbooks, and similar, each MSc student has also to follow a short course on resources in the humanities and another one in the social sciences, and then opts to continue one, or the other, as a 'minor' information resources subject. For the MSc, students have to study the information resources in science and technology to the 'major' level. For our purpose 'information resources' include both published and unpublished information and sources irrespective of form. Thus knowing where to go and whom to approach for information, and how to find out about where and who, is considered to be quite as important as the ability to make use of other types of sources of information. In this course, report literature, patents, trade literature and standards are quite as 'respectable' as the high quality learned journals. The study of resources involves the student in practical work in the form of literature searches of varying breadth and depth, and these do, in some cases, lead to the writing of abstracts and of various types of survey and report on specialized topics in science and technology, drawing on the student's subject knowledge. The combination of studies in science and technology with the general introduction and the more specialized courses in humanities and social sciences does allow for complex topics to be considered involving technical and economic, commercial, or social factors, or combinations of science with logic, philosophy, language, or history, to mention just a few possibilities.

Under the third head, *communication of information,* two main interrelated groups of topics are considered. The first is the organization of information for use, the second is systems and services.

The organization of information for use includes the study of the principles and techniques of information storage, retrieval, and dissemination. There is a short course on conventional library cataloguing and classification, frequently the most expensive operations in libraries combining reference with lending, followed by a course on non-conventional indexing and classification. Consideration of machine-aided information storage, retrieval and dissemination leads first to a study of reprography and printing basics (up to and including computerized type-setting), manual and machine-sorted punched card systems and of the use of computers. Following the short course on computer basics (which, incidentally, is also compulsory for our MA in Librarianship students) there is a further required course on computer applications for IR. There are also two optional courses, one on computer use in library 'housekeeping' operations and one in computer programming. It is worth mentioning that an on-line computer console is shortly to be installed in the School and will be linked to the University's largest computer, an ICT 1907. The course itself will, of course, benefit from parts of the research programme being carried out in the School, and particularly studies of the handling of chemical structure information by computer and the automatic production of indexes.

Under systems and services two main topics are studied: first the special, academic, public, national, and international information and library complex, and second, management topics leading to options in more advanced statistics and in systems analysis and design. The first principal topic provides the setting for a science information unit so that it can be viewed not in splendid isolation but as one in a large and growing network of libraries, information centres, and organizations concerned with science information, whilst in the second principal topic the operations of science information units are looked at in some detail. It is here that the specific problems of systems and services in science information units are studied and looked at methodically with the aid of various management techniques. There is a required course in basic statistical method, with particular stress on use in surveys and operational control by sampling, and the problems of survey work are considered; the introduction to operational studies in libraries and information services is further developed in an optional course in systems analysis and design.

The final item under the heading 'content of course' is the *special study*. This is intended to be a piece of individual work by the student on any relevant topic within the very broad field of science information work selected in agreement with the student's supervisor. In the past the topics ranged from a study of the dissemination of innovation in the field of fertilizers in the UK, to the information needs of an intestinal absorption information centre, a statistical study of a formula index of chemical compounds, or evaluation of articulated subject indexing for *Physics Abstracts,* to mention just four of the forty-four special studies carried out by science and technology graduates in the diploma course. These studies have in the past, when they had to be carried out during the Christmas vacation and the first two weeks of the Lent term, produced reports ranging from about ten thousand to about forty thousand words, depending largely on the number of graphs and tables and the type of study. We expect that whilst the length of the reports will not necessarily increase, when the study is carried out under the MSc regulation over an approximately three-month period following the examinations at the end of May or beginning of June, the quality and standard of presentation will improve still further.

So much for the aims and content of the MSc course in Information Studies.

THE STUDENTS

I now come to the second main topic: who are the students?

The course is one for a higher degree in the University of Sheffield, and therefore the conditions of entry are no less stringent than those for admission to higher degree studies in other departments of the University. The regulations state that the candidate for entry to the course must:

'(*a*) be a graduate of a University of the United Kingdom, or hold an equivalent qualification of some other institution or body recognized by the Senate for this purpose under General Ordinance VI;[2] and

(*b*) satisfy the Director of the Postgraduate School of Librarianship and Information Science that he has an adequate reading knowledge of two languages in addition to English; and

(*c*) normally have had approved practical experience in a library or information service.

A candidate whose qualification is of lower standard than second class honours must satisfy the Board of the Postgraduate School of Librarianship and Information Science as to his general and special qualifications.'

Candidates for the MSc must normally be graduates in pure or applied science, technology, engineering, or similar subjects, such as mathematics or statistics, but special cases will be considered on their merit. The adequate reading knowledge of two foreign languages is a practical requirement necessary to ensure that the science information worker can make use of literature in these languages, which should be two of importance in science and technology. We do not expect translation into the foreign language, but we do expect the willingness and some ability to make use of sources of information not conveniently published in English. On our past experience this expectation has not been disappointed, and all our students had managed to extract information successfully even from publications in Russian (after very short practice). The approved practical experience is usually interpreted as experience in a good science information unit, and I can say that we are prepared and able to help in arranging this, provided that the application for attending the course is received early enough and the candidate is willing to work anywhere in the United Kingdom.

These are the 'formal' qualifications, but experience shows that for success in science information work (and in other fields) one other factor is very important and that is the possession of a positive personality. Some of the desirable characteristics are initiative, an ability to make full use of opportunities, good personal relations, and ability to express oneself orally and in writing, the possession of judgement and commonsense, a willingness to accept responsibility and to take decisions, and organizing ability, to mention just a few. In this connection I would add the observation that departments in some universities appear to be able to develop the personality of a student better than others, and my impression is that an important role is played by intensive seminars and tutorials and the major experiment in the final year. Experience has also shown that some science information units are also noticeably more successful in developing the positive personality characteristics of a graduate than others, probably so because of the attitudes and ability of their staff.

The 'when?', that is the timing of the course in the student's life, is determined not so much on theoretical grounds of the 'best' time for particular parts of the course (e.g. management topics only for those with several years' practical experience, or mathematical topics as early as possible), but on grounds such as availability of finance and family responsibilities. It is, I hope, accepted that the full-time course is not only less physically exhausting but also that it leads to greater success than a course with similar content spread over years of part-time study.[8] If a student is to take a year off from earning a salary it is normally easier to do this when the salary would be low and the family responsibilities small or non-existent. However, so as not to sound too discouraging for more mature potential students, I should mention here that all of our recent science students in their early thirties who took the risk secured posts at basic salaries of between £2,000 and £2,800, which, by current UK standards, cannot be claimed to be inadequate. Nevertheless, it is noticeable that, on average, younger students are able to absorb theoretical material, in particular, more readily than the mature students, who, however, gain whenever they draw on their valuable practical experience. We found that a 'mix' of students with a short postgraduate experience and more mature students with up to ten or twelve years' experience works extremely well with a ratio of, say, five to seven young graduates to one mature graduate.

Turning to the 'where?' of the science information studies, one can divide these into three periods: the pre-course practical experience, the formal course ending with the examination, and the special study. I have already mentioned pre-course practical experience, and I would like to add that we are greatly encouraged by the very responsible attitude and well-thought-out and managed programmes of work in some science information units and establishments. We found that this is not a matter of staff numbers, but one of opportunities created by the Head, or the Deputy, who believes, as do the senior staff, in playing an active part in the promotion of their profession. We are continually surprised to see how much a student manages to learn in a fairly short period of intensive work in such a well-run unit, and, in contrast, how little, in one or two 'black spots', even after a full year of 'training'. We attach considerable importance to this pre-course experience, since we find that it enables the student to relate what is being studied to 'real life' and to find his bearings much more rapidly, particularly during the first term of studies. The formal course is, of course, given in the School, but regular visits are paid to libraries and information units, representing a wide spectrum of activity, both in the region and in the London area. In the past, visits included such units as ICI (Pharmaceuticals) in Alderley Edge on the other side of the Peak District National Park (which comes to within less than three miles of the University), the Unilever Research Laboratories in Port Sunlight, the Production Engineering Research Association in Melton Mowbray, United Steel Laboratories in Rotherham, and similarly, the National Lending Library in Boston Spa, where several days are spent during the course, the Universities of Leeds, Bradford, York, Lancaster, and Nottingham, and other libraries and information units. The London area visits included a number in Oxford or Cambridge.

This programme of visits varies from year to year and continues to be developed in support of the course. Finally, the special study. This is not necessarily carried out in Sheffield, but is carried out in whichever place (or places) is the most appropriate for studying the particular topic. Thus, in the past, one or two students used the Atlas computer at Chilton, others were based on London, and yet others spent part of the time gathering data and information in various other parts of the UK.

The last question to be considered is 'how?'.

In designing the one-calendar-year, full-time course we decided to attempt two things:

1 to reduce the number of formal student-staff contact hours to a minimum, and
2 to increase the proportion of time devoted to seminars and tutorials by reducing the number of formal lectures.

Both these decisions were based on our experience of teaching a similar course (that is the diploma course)[4] and on student response over the past few years, even though we realized that by reducing the formal lecture load the students might remain ignorant of some fact or other until after they had begun to work in science information. In our view this risk is well worth taking if science information studies at this level are not to be reduced to a test of stamina in note-taking and of feats of memory. We believe that by reducing the formal contact load more time is made available for study and individual contact with staff; by replacing lectures by seminars and tutorials students are given greater opportunity for presenting, and discussing, the results of their studies. Our experience has been that the more responsibility is placed on the student for working under his (or her) own drive, the better he (or she) responds, and, I might add, the more realistic the experience for the future career.

I have mentioned lectures, seminars, tutorials and informal discussions, and whilst most of this work is being carried out by the full- and part-time staff of the School, backed as it is by independent research workers and research students (working for their MSc, MA, and PhD by thesis), a fairly substantial number of lectures is being given by visiting speakers, as hitherto. The visiting speakers included in the past Dr D. J. Urquhart (National Lending Library for Science and Technology), Miss M. Webb (British Museum), J. C. Gray (OSTI), H. Dammers (Shell Research), N. Shaw (Unilever Research), L. Wilson (Aslib), F. Liebesny (British Aluminium and Institute of Information Scientists), B. Palmer (Library Association), and many other no less distinguished persons both from the UK and overseas, and visits by speakers of this calibre will, we confidently expect, continue.

SUMMARY AND CONCLUSION

In designing the MSc course in Information Studies we have drawn both on our own experience and on our detailed study of the experience of many others. We have incorporated in this course the recommendations of the Sheffield study and, in particular, we have tried to take into account the need for continued progress in science information work, in both the 'production' category of work and in the R&D categories. We have tried to see science and technology in industrial, governmental, and academic communities not as separate activities but as interdependent and interrelated activities all aiming at scientific and social progress and therefore all deserving the support of the best science information workers.

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1 SCHUR, H., *and* SAUNDERS, W. L. (with the assistance of L. J. Pargeter). Education and training for scientific and technological library and information work. London, HMSO, 1968 (in press).

2 Of the first 44 science and technology graduates, 40 were graduates of over 20 UK universities and university colleges, ranging from the oldest (Oxford) to the newest (Bradford), and from St Andrews in the north to Southampton in the south; there was one science graduate from each of the universities of McGill, Dacca, Oslo, and West Indies.

3 GERSTL, J E., *and* HUTTON, S. P. Engineers: the anatomy of a profession. London, Tavistock, 1966.

4 SCHUR, H. Education for scientific and industrial librarianship and information work at University of Sheffield. *Bulletin, Institute of Information Scientists,* 1967, 5, (3), 9–21.

STANDARDS IN EDUCATION IN INFORMATION SCIENCE

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THE courses in Information Science at the City University (formerly Northampton College of Advanced Technology), which started with a two-year part-time evening course in January 1961, were the first in the world to attempt to cover the whole field of information work as a definitive discipline. They were based on the syllabus devised by the Institute of Information Scientists. The success of the evening course led to the establishment of a full-time one-year course in September 1963. Drexel College of Technology, in the United States, had started a one-year course earlier in 1963. The original one-year course in London was for an academic year, and led to a Diploma. When the College became the City University, in 1967, the full-time course was extended to a calendar year, and this leads to the degree of Master of Science in Information Science. Researches are also being undertaken.

The establishment of these courses has been based on two aims: to provide adequate education in this field, and to demonstrate the scope and individuality of information science as a discipline distinct from other fields. There were initially, over the previous ten or more years, many discussions of the scope of information science and of its differences from librarianship; the opportunity to put the syllabus into practice, demonstrate its viability and adequacy, and thereafter to continue to develop it, has thus been an exciting challenge. The first evening courses were aimed mainly at adequate practical needs of persons already started in information work and interested in studying the whole range of work they might encounter in their careers. The main subjects were, and still are, those of courses of information, from a book to international organizations; dissemination of information, from answering an individual inquiry to methods for the international dissemination of information; patents and patent law, standards, copyright, etc.; abstracting; classification, indexing, and information retrieval (with special reference, of course, to computer systems); and the organization of an information department. Applying to most of these subjects there is the general need for good writing, report writing, editing and publication aspects; ancillary subjects include reprography and some elements of printing.

The students of the evening course cannot, within the limited time, be given much practical work (this mainly arises in abstracting, and a little in report writing and faceted classification), and one has to look to their being able to apply what they learn in the lectures to their daily work, but this is of course not always possible. The full-time course has therefore provided a much more adequate basis for developing the teaching; it has also been possible to advance in the academic aspects of the subjects, with special regard to information retrieval. In the Diploma course there was adequate time for practical work in all fields, including the making of a month's issue of an abstracting journal, complete with indexes, exercises in searching, in classification, and in answering real inquiries from college staff; students also prepared an evaluative report on a different technical research-type subject. In the MSc calendar-year course it has been possible to increase the study of computer operation and to deal in greater detail with such matters as the testing of retrieval systems. In addition, the students write a thesis, which may be in the form of a 'state-of-the-art' report, or a small research. The standards for the MSc are in fact to take teaching to the limits of present knowledge. The need for a thorough practical training is not set aside, but the course now also provides a high educational standard. A full series of tutorial sessions has helped to achieve this.

The whole subject of information science is developing so rapidly that there is a continuing need to keep the educational standards up to date. One great difficulty is the lack of any proper textbooks. There are good general introductions, such as the Aslib *Handbook,* and there is now the advanced *Annual Review of Information Science and Technology,* but in between there are only a very few specialized books which are not suitable as textbooks. An urgent requirement for future teaching is for a complete range of sound surveys written specifically for students. Another difficulty which must be solved is that of providing for practical work on indexing systems up to computer level; the student can learn the principles of, say, optical-coincidence cards, and can analyse a few papers, but there cannot be time to study the effectiveness of retrieval from a large body of indexed material; merely seeing it in operation, during a visit to some department, is no substitute. The problems are of course much greater when one considers computerized information retrieval systems. It will, however, take a long time to build up any adequate set of material at the University; there is also the problem of the subject field, since students come to the course from the widest variety of initial scientific and technical fields. In this connection, it is apparent that there is going to be a need to train students for information work in economics and the social sciences, but the special requirements of these fields are not yet well established.

The aims of establishing the discipline of information science have led to these high-level courses, but there may well be a demand of increasing importance for persons of an intermediate standard, who will find an adequate career in the more routine practical tasks of an information department. Even for the evening course, priority has been given to graduates, but applicants with, say, A-levels in science have been accepted if there was room. The number of applications is now such that non-graduates are unlikely to obtain a place. For the standards set, this is no doubt a proper situation, though one or two 'less than graduate' students have in the past done well. It is now felt that serious consideration must be given to the provision of some form of intermediate level course suitable for non-graduates.

A further problem is the availability of teachers. In a relatively new field such as information science, where even the present leading exponents have had to learn their techniques 'on the job', the only persons available for teaching have been those who have had many years of experience and have been sufficiently enthusiastic to develop special interests and expertise and also to study the work of others over a wide range. Such persons are rare, and do not now necessarily find an interest in teaching, apart from considerations of remuneration, in regard to which University salaries do not compete with industrial rewards. It is therefore necessary to look to the possibility of good students coming back after an adequate period of experience in industry, etc., to take up teaching. This hope does not, however, solve the present problem.

Since the courses at the City University were started, there has very properly been a demand for courses elsewhere than in London. The development of the post-graduate course, now also to be an MSc course, at Sheffield University is well known. An undergraduate degree course, combining the study of a science and information science, over four years, is starting this year at Newcastle (Rutherford College of Technology), and similar plans are under way at Leeds, Loughborough, and elsewhere. These courses have been developed independently and, although there have been no organized meetings to discuss syllabuses or standards, it has become evident that there are considerable differences in the scope and levels of the education provided. I do not propose to discuss these differences here, but it will at least be clear that the level of an undergraduate course cannot be the same as that of a post-graduate course. Whether an undergraduate course is more suitable for producing a given level of information scientist than the suggested intermediate course discussed above can be a matter for discussion. It depends upon the types of persons it is thought desirable to train for different levels of work. It is however of importance to the prospective student that he should have an adequate basis for decision on the type of course which will be most appropriate for him. It is also of importance for employers to be able to assess the level of training which candidates for posts have been enabled to achieve.

It is therefore time to take stock of the position before the picture becomes further confused. In other disciplines, the levels of the different qualifications, whether less than graduate, graduate or post-graduate, are reasonably well established and understood. Admittedly, the standards in these other fields may have been achieved only gradually, but we have the opportunity to improve upon such slow development by adequate consultations now. Whereas the demand for information scientists is increasing rapidly, employers' appreciation of the types of work which can be undertaken and the standards of such work which can be expected is often inadequate or confused. Possibly the long disputations in earlier years between librarians and information scientists have left behind traces of misunderstanding or even antagonism. It is to be hoped that this is not the case, and I have no desire to re-open such discussions, but clear expositions of the aims and standards of different courses would help to remove difficulties. At least the experience of education at City University has shown that at the level of a post-graduate course there is so much material to cover in a syllabus which hardly includes anything covered by librarianship courses that any attempt to widen the syllabus in the latter direction would either lead to inadequate coverage of the various subjects or to extension of the course to two years, which, at present, would certainly not be acceptable to post-graduate students, even if they could digest it all. Over the wide spectrum which one may consider to represent both librarianship and information science, the intermediate and overlapping parts are small, so that each 'half' of the spectrum can properly form the basis of a very full syllabus, and the separation is thereby justified in that respect alone.

The post-graduate level of course has a special value. If any discipline is to develop well, it needs to be established academically, that is, information science requires to achieve recognition as a science in its own right. There have been voiced opinions that information work is not more than a mixture of applied techniques and cannot develop further. One has only to point to the many basic and complex problems involved in information retrieval to refute this view; other problems, such as those of effective dissemination of information, the means of promoting the flow of information, or its effective presentation, are equally in need of high-level and basic research. Only when information science is fully established as an academic discipline, which is recognized and appreciated in other academic fields, will there be the possibility of the desirable co-operation of other scientists (and further faculties) in developing our knowledge in this field. Information work impinges very closely upon the work of scientists, technologists and many, if not all, other activities, so that co-operation is essential.

Other levels of education may properly be related more to the needs of practical work in industry, research associations, etc., where the day-to-day provision of information in various forms takes first place. There is not yet, however, any well-defined picture of what types of persons are required for different activities, or of how many different types are needed. The post-graduate type of education can produce persons fitted eventually for the senior posts, and such persons do not take well to the idea of doing only abstracting, or card-indexing, or other somewhat routine tasks. There would certainly appear to be a need for one 'assistant-type' of personnel, for which even the undergraduate courses may set too high a level. On the other hand, the problem is complicated by the frequently complex and advanced technical background to even the more routine tasks. It is not always possible to separate the more intellectual from the merely mechanical or routine aspects of a given task, for instance in the work of indexing on optical coincidence cards. All such considerations call for discussion in establishing really useful standards of education.

There is also the professional aspect of these problems. The Institute of Information Scientists is now well established as the professional body in this field. It is very much concerned with defining and maintaining adequate standards in information work, and is hence increasingly faced with the difficulties of assessing the standards of different qualifications attained by those coming into information work. The Institute worked out its own syllabus, and this has been used as the basis for the courses at the City University. Developments in these courses are however always under consideration, and the close co-operation possible between the University and the Institute (since

I am personally both course organizer and Secretary of the Institute) has been most helpful. It will be necessary for the Institute to achieve equal insight into the contents and standards of all other courses. In April last year there was held an international conference on education in information work, and very great differences were apparent between the aims and levels of teaching in different countries. If, as a first step in promoting the whole subject of information science and its practical achievements, we can by co-operation and discussions with all organizations concerned set a pattern in the United Kingdom to which the rest of the world can turn for a high standard, a great step forward will have been taken.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK

*Head of Library and
Information Services*

CURRENT AWARENESS LIST

Items are available in the Aslib Library and may be borrowed unless marked to indicate reference copies.*

User Studies

SLATER, MARGARET
Meeting the users' needs within the library.
In BURKETT, JACK, *ed.*
Trends in special librarianship, 1968, p.99–136.

PHIPPS, BARBARA H.
Library instruction for the undergraduate.
College and Research Libraries, vol.29, no.5, September 1968, p.411–23.
Results of a survey into the current state of library instruction in American colleges. Questionnaires were sent to 200 colleges and the results showed general dissatisfaction. Programmed instruction and audio-visual aids show promise for the future.

ANDREWS, THEODORA
The role of departmental libraries in operations research studies in a university library. Part 2: a statistical study of book use.
Special Libraries, vol.59, no.8, October 1968, p.638–44.
Uses mathematical models and statistical techniques to study the dependence of circulation rate on the age of a book and other characteristics.

COOPER, MARIANNE
Organizational patterns of academic science libraries.
College and Research Libraries, vol.29, no.5, September 1968, p.357–63.
Outlines the historical development of organizational patterns and the tendency to focus on library rather than on user interests. Considers which forms of library organization best serve users' needs.

EDE, J. R.
The Public Record Office and its users.
Archives, vol.8, no.40, October 1968, p.185–92.

WYSOCKI, ADAM
Podstawowe źródła informacji naukowej na tle analizy potrzeb użytkowników.
Aktualne Problemy Informacji i Dokumentacji, vol.13, no.4, 1968, p.1–6.
The major sources of scientific information are listed, as a result of an analysis of user needs in various countries.

Library Systems

EGGERT, JOHANNA
Normen als Arbeitsmittel für die Dokumentation.
Nachrichten für Dokumentation, vol.19, no.5, August–September 1968, p.181–7.
Mainly a list of international and national standards.

LIBRARY ASSOCIATION. London and Home Counties Branch
The shape of things to come. papers read at the Weekend Conference of the Branch held at Eastbourne, 26–8 April 1968. [London], the Association, 1968.
75 p.

SUBBARAO, M. SUSEELA
The place of library resources in doctoral programs.
College and Research Libraries, vol.29, no.5, September 1968, p.424–30.
Supplements paper by Robert B. Downs on the same subject; considers some factors in the production of work for doctoral degrees, and the relative importance of books and current periodicals.

HARLAND, S.
Architectural trends in university libraries.
In PEEL, BRUCE, *ed.*
Librarianship in Canada 1946–67, 1968, p.163–70.

LINE, MAURICE B.
The university library: functions and opportunities.
Library Review, vol.21, no.7, Autumn 1968, p.345–8.

ENRIGHT, B. J.
The university library. key to education and communication.
Quest, no.4, March 1968, p.6–14.

FILION, PAUL-EMILE
University libraries before and after Williams.
In PEEL, BRUCE, *ed.*
Librarianship in Canada, 1946–1967, 1968, p.73–86.

PARRY, THOMAS
Future developments of libraries in universities.
In LIBRARY ASSOCIATION. London and

Home Counties Branch. The shape of things to come, 1968, p.5–21.

Administration and Management

BURKHALTER, BARTON R., *ed.*
Case studies in systems analysis in a university library. Metuchen, NJ, Scarecrow Press, 1968. 186 p. diagrs.

BRITISH STANDARDS INSTITUTION
Glossary of terms used in project network analysis. London, the Institution, 1968. p.11. (BS 4335 : 1968.)

NITECKI, ANDRE
Cost accounting forms designed by the Cost Accounting Study Committee of the Library Administration and Technical Services Sections [of the Michigan Library Association].
Michigan Librarian, vol.29, no.4, December 1963, p.19–21.
Two forms for arriving at the unit cost for technical services in a library.

BAKER, J. E.
Office lighting, part 1: do your staff view their work in the right light?
Office Equipment News, October 1968, p.30–2.
Standards of lighting are discussed.

BAKER, J. E.
Office lighting, part 2: choosing the best lighting for your office.
Office Equipment News, November 1968, p.30–3.
Types of lighting available, and appropriate uses.

SOUTH, MARY
Staffing the special library.
In BURKETT, JACK, *ed.*
Trends in special librarianship, 1968, p.137–59.

LIBRARY manpower problems: a committee report, [by Fay Blake and others].
ALA Bulletin, vol.62, no.8, September 1968, p.995–1000.
Presented at the second Council Meeting, 28th June 1968, at the annual ALA conference in Kansas City.

SCHMELZER, MENAHEM
Fire and water: book salvage in New York and Florence.
Special Libraries, vol.59, no.8, October 1968, p.620–5.
Library salvage efforts are described and problems of re-establishing library services are included.

Printing and Publishing

*BRITISH STANDARDS INSTITUTION
Method for the sampling of paper and board for testing. Rev. ed., London, the Institution, 1968.
9 p. (BS 3430.)

FRIEDMAN, HANNAH B.
Preservation of library materials: the state of the art.
Special Libraries, vol.59, no.8, October 1968, p.608–13.
Ways of preserving deteriorating book papers are discussed, and the work of W. G. Barrow, the Association of Research Libraries, the Council on Library Resources and the New York Public Library is described. A plea is made for the use of paper of lasting quality in newly printed books.

BLUHM, ANDREW
Photosetting, Oxford, Pergamon Press, 1968. ix, 106 p.

GOULDESBROUGH, P., *and* MCNEILL, W. D.
Lithographic printing for record publications.
Archives, vol.8, no.40, October 1968, p.172–8.

Reprography

WILLEMSE, J.
The future of the microfiche in the library: possibilities for better service. 5 p.
Lecture delivered at Exhibition of Careers and Education, Milner Park, Johannesburg, 8th August 1968.

TRAENDLY, WALLACE F.
Microfilm's role in meeting the mass information challenge. [New York], McGraw-Hill Information System Co., 1968. [12] p.
Paper presented at 17th National Microfilm Association Convention, Chicago, 21st May 1968.

FRANK, OTTO
Mikrofilm-Lesegerate und Mikrofilm-Lese-Vergrosserungsgerate.
Reprographie, vol.8, no.10, October 1968, p.264–6.
Microfilm readers and enlargers; their construction; suppliers and available models in Germany.

DORAN, THOMAS G.
Report on non-impact printing project (NIPP). Washington, DC, US Army Material Command, 1968. 80 p. (AD 671 611.) 2 microfiches.

TODD, FRED W.
The present and future role of microfilm in Southern Methodist University's Industrial Information Services Center.
NMA Journal, vol.1, no.4, Summer 1968, p. 128–30.
Description of the Center, its use of microfilm to facilitate storage and the need for greater user acceptance.

BUJKOVSKY, GUSTAV J.
Microfilming at Convair.
NMA Journal, vol.1, no.4, Summer 1968,

p.147–8.
Outlines the different microfilming systems in operation at the Convair division of General Dynamics, San Diego, California.

MULLER, GERHARD
Mikrofilmtechnik fur das Bereithalten von Patent-literatur.
Nachrichten fur Dokumentation, vol.19, no.5, August–September 1968, p.159–65.
See also Reprographie, vol.8, no.10, October 1968, p.259–63.
Preprint to 10th annual meeting of the *Ausschuss fur Patent Dokumentation,* Munich, 9th May 1968.
Technical prerequisites of microfilm systems in Patent Offices. Use of microfilm for international exchange. Outlook for automation.

BUCKLEY, CLAY W.
The 105–35 mm micro-miniature film system for engineering drawings for the Pacific Gas and Electric Company.
NMA Journal, vol.1, no.4, Summer 1968, p.131–45.
Describes the development of the system with numerous diagrams and photographs of the principal equipment used.

INTERNATIONAL ATOMIC ENERGY AGENCY. Library
IAEA specification for microfiche copies of periodicals. Vienna, the Library, 1968.
12 p.

DEUTSCHE NORMEN: Microplanfilm fur Dokumentation (Microfiche).
Reprographie, vol.8, no.8, 1968, p.223–4.
German standards: transparent microfiche for documentation use.

BRITISH STANDARDS INSTITUTION
Specification for still projectors. London, the Institution, 1968.
25 p. (BS 1915: 1968.)

BRITISH STANDARDS INSTITUTION
Methods for the measurement of performance of still projectors. London, the Institution, 1968.
16 p., diagrs. (BS 4120.)

Subject Organization

BURKETT, JACK, *ed.*
Trends in special librarianship; based on a series of lectures delivered at Ealing Technical College, April 1968. London, Bingley, 1968.
205 p.

HUNT, EDNA F.
Growth of special libraries in science and technology.
In PEEL, BRUCE, *ed.*
Librarianship in Canada, 1946–1967, 1968, p.87–94.

ARCHITECTS' office libraries. the case for an efficient library service.
Architects' Journal, vol.148, no.32, 7 August 1968, p.257–60.
Sets out principles on which a library should be founded and run, and provides general guidance on types of service, capital and running costs. Based on a series of articles by Dargan Bullivant.

ARCHITECTS' office libraries: manual of procedure.
Architects' Journal, vol.148, no.32, 7 August 1968, information sheet 1604, [18 p.].
Based on an article by Dargan Bullivant, advises on formulating a library policy, describes procedures and techniques for providing a library/information service; includes a check-list for setting up a library.

LUTZ, THEO, *and* BEUTLER, HANS
'Management Information Systems' (MIS). Begriffe und Konzeption fur Management-Informationssysteme.
IBM Nachrichten, vol.18, no.191, October 1968, p.367–74.
First in a series of articles; discusses the problems and broad outline of such systems.

KELLEY, WILLIAM T.
Marketing intelligence: the management of marketing information. London, Staples, 1968.
xii, 248 p.

DAWSON, JOHN P.
The Harvard collections of foreign law; changing dimensions of legal study.
Harvard Library Bulletin, vol.16, no.2, April 1968, p.101–10.

SHEININA, T. I.
Bibliographic information system in agriculture in the U.S.S.R.
Quarterly Bulletin of the International Association of Agricultural Libraries and Documentalists, vol.13, no.4, October 1968, p.175–9.

FELSTEHAUSEN, HERMAN
Improving access to Latin American agricultural information through modern documentation centers.
Quarterly Bulletin of the International Association of Agricultural Librarians and Documentalists, vol.13, no.3, July 1968, p.117–28.
Outlines present difficulties of access to agricultural information in non-book form and suggests the establishment of agricultural information centres operating a mechanized information-handling system as a solution.

GEORGE WASHINGTON UNIVERSITY. Biological Sciences Communication Project
An information guide to selected books of biochemistry and related subjects, comp. by W. F. Heenan, Washington, the University, 1968.
109 p. (. . . Communiqué 30.)

BRAGA, GILDA MARIA, *and* FIGUEIREDO, LAURA MAIA DE
Fontes de informação em ciências biomédicas. Rio de Janeiro, Centro de Bibliotecnia, 1968.
344 p.
Includes classification systems, p.149–51.

PAYNE, L. M.
The Royal College of Physicians of London and its library: 450th anniversary.
Camden Journal, vol.4, no.3, October/November 1968, p.44–5.
Historical outline.

MABBS, A. W.
The Public Record Office and the second review.
Archives, vol.8, no.40, October 1968, p.180–4.
Describes the PRO's system of reappraising records after 25 years.

BURKETT, JACK
Published indexing and abstracting services.
In BURKETT, JACK, *ed.*
Trends in special librarianship, 1968, p.35–72.

STIEFERMANN, WILHELM
Aufwertung von Registraturen zu Dokumentationsstellen.
Dokumentation, Fachbibliothek, Werksbücherei, vol.16, no.6, September 1968, p.154–6.
Compares central registries and documentation centres; points out common problems and experience and suggests reasons for amalgamation.

Mechanization

KIMBER, RICHARD T.
Automation in libraries. Oxford, Pergamon Press, 1968.
140 p. (International series of monographs in library and information science, vol.10.)
31*s* 6*d*.

ANTHONY, L. J.
Mechanisation inside the library.
In BURKETT, JACK, *ed.*
Trends in special librarianship, 1968, p.73–97.

LEBOWITZ, ABRAHAM I.
The mechanization of technical services in special libraries.
In SPECIAL LIBRARIES ASSOCIATION. Documentation Group
Practical problems of library automation, [1968], p.1–6.

LINGENBERG, WALTER
Computereinzatz in Bibliotheken der Bundesrepublik Deutschland. Berlin Universitätsbibliothek der Technischen Universität, 1968.
Var. pag.

PFLUG, GÜNTHER, *and* ADAMS, BERNARD
Elektronische Datenverarbeitung in der Universitätsbibliothek Bochum. Ergebnisse–Erfahrungen–Plane. Bochum, Schurmann and Klagges, [1968].
147 p., illus.
Electronic data processing in the University Library, Bochum.

KAY, MARTIN, *and others*
The catalog input/output system. Santa Monica, Calif., Rand Corp., 1966.
71 p. (AD 629 606.)
2 microfiches.

LEONARD, LAWRENCE E.
Colorado Academic Libraries Book Processing Centre: a feasibility study.
College and Research Libraries, vol.29, no.5, September, 1968, p.393–9.
Outlines the background of the NSF supported study.

DOUGHERTY, RICHARD M., *and* STEPHENS, JAMES G.
Investigation concerning the modification of the University of Illinois computerized serials book catalog to achieve an operative system at the University of Colorado libraries. Boulder, Colo., Colorado University Libraries, 1968.
59 p. (PB 178 216.)

COURTRIGHT, BENJAMIN
Automated circulation systems.
In SPECIAL LIBRARIES ASSOCIATION. Documentation Group
Practical problems of library automation, [1968], p.39–45.

HAMNER, WALTER C.
Mechanized circulation control.
In SPECIAL LIBRARIES ASSOCIATION. Documentation Group
Practical problems of library automation, [1968], p.33–7.

BOYD, ANNE H.
Introduction to computers.
In KIMBER, RICHARD T.
Automation in libraries, 1968, p.18–34.

GRONER, G. F.
Real-time recognition of handprinted text: program documentation. Santa Monica, Calif., Rand Corp., 1968.
184 p. (AD 670 584.)
3 microfiches.

LOW cost document conveyor system speeds internal paper flow.
Mechanised Accounting and Computer Management, vol.3, no.10, 15 October 1968, p.43–4.
Describes STAR 75T (single tube automatic routing), a product of Shipton Automation Ltd

Classification and Cataloguing

*DENISON, BARBARA, *comp.*
Selected materials in classification; a bibliography. New York, Special Libraries Association, 1968.
142 p.
Revision of 5th ed. of Guide to SLA loan collection.

*BRITISH STANDARDS INSTITUTION
Universal decimal classification, English full edition, 4th international edition, 618 gynaecology, obstetrics. London, the Institution, 1968.
23 p. (BS 1,000; FID publication no.179.)
20*s*.

BRITISH STANDARDS INSTITUTION
Universal decimal classification, English full edition, 4th international edition, 65/651 + 657/659 industrial and business management and organization, communications. London, the Institution, 1968.
39 p. (BS 1,000; FID publication no.179.)

*BRITISH STANDARDS INSTITUTION
Universal decimal classification, English full edition, 4th international edition, 688/689 fancy goods, toys, hobbies. London, the Institution, 1968.
15 p. (BS 1,000; FID publication no.179.)

IMMROTH, JOHN PHILLIP
A guide to Library of Congress classification. Rochester, NY, Libraries Unlimited, 1968.
356 p.

NICOLE-GENTY, GENEVIÈVE
Les classifications médicales.
Bulletin des Bibliothèques de France, vol.13, no.7, July 1968, p.289–314.
Different schemes are discussed, and preference is shown for a broad, continually updated system. A list of existing schemes is included.

NATIONAL COMPUTING CENTRE
Commodity coding: its effect on data recording and transfer. Manchester, the Centre, 1968.
128 p. 30*s*.
Report prepared by Scientific Control Consultants.

JOWITT, R.
The classification of foodstuffs and their physical properties.
Food Trade Review, vol.38, no.10, October 1968, p.55–64.
Features a new classification which allows the combination of any physical property with any foodstuff to be represented by a pair of co-ordinates.

MAYR, ERNST
Theory of biological classification.
Nature, vol.220, no.5167, November 1968, p.545–8.

HOPKINSON, SHIRLEY LOIS
The descriptive cataloging of library materials. 3rd rev. and enl. ed. San José, Calif., Claremont House, 1968.
78 p.

SLOCUM, ROBERT B., *and* HACKER, LOIS
Sample cataloging forms: illustrations of solutions to problems in descriptive cataloging, 2nd rev. ed. Metuchen, NJ, Scarecrow Press, 1968.
205 p.

GORMAN, MICHAEL
A study of the rules for entry and heading in the Anglo-American cataloguing rules, 1967. (British text.) London, Library Association, 1968.
67 p. 16*s*.

OSBORN, ANDREW D.
AA cataloguing code.
Library Journal, vol.93, no.17, 1 October 1968, p.3523–5.
Review of Anglo-American cataloguing rules, North American and British texts.

CHICAGO. University. *Graduate Library School*
Requirements study for future catalogs: progress report no. 2. [Co-principal investigator, Don R. Swanson.] Chicago, the School, 1968.
226 p.

HOWELL, R. W.
Middle digit filing.
Medical Record, vol.9, no.1, February 1968, p.5–7.
Middle digit methods are described and compared with numerical and terminal digit filing.

Language and Indexing

MA, JOHN T., *comp.*
Elementary Chinese for American librarians: a simple manual. New York, Oriental Society; Hong Kong, South Sky Book Company, 1968.
vii, 38 p. (Oriental Publications.)

NISTOR, E., *and* ROMAN, E.
Limbajele documentare.
Probleme de Documentare şi Informare, vol.2, no.9, September 1968, p.574–86.
Documentation languages are defined, and the differences from natural languages delineated.

WERSIG, GERNOT
Bemerkungen zu terminologischen Problemen der maschinellen Dokumentation.
DIN-Mitteilungen, vol.46, no.5, May 1967, p.206–11.
Terminology problems in machine documentation; based on a study of methods of treatment. Bibliography of 65 references.

HALLE, MORRIS, *and* KATZ, JERROLD J.
Studies in the grammar and semantics of

English. Cambridge, Mass., MIT. Res. Lab. of Electronics, 1968.
73 p. (AD 670 572.)
2 microfiches.

FRIEDMAN, JOYCE
A complete system for transformational grammar. Stanford, Calif., Stanford Univ. Dept. Computer Science, 1968.
35 p. (AD 665 827.)
1 microfiche.

*TULSA. University. *Information Services Department*
Exploration and production thesaurus; listing of scientific and engineering terms and their relationships for use in vocabulary control in indexing and retrieving.
Petroleum Abstracts, 3rd ed. Tulsa, Okla., the University, 1968.
viii, 260 p.

LESLIE, PHILIP
Indexing philosophies.
SPECIAL LIBRARIES ASSOCIATION. Documentation Group
Practical problems of library automation, [1968] p.7–22.

VENSENYI, PAUL E.
Indexing in source.
College and Research Libraries, vol.29, no.5, September 1968, p.400–2.
Suggests indexing in source project to overcome time-lag between primary and secondary periodicals and outlines the form it would take.

ZABRISKIE, K. H., *and* FARREN, A.
The B.A.S.I.C. index to *Biological Abstracts*.
American Journal of Pharmaceutical Education, vol.32, no.2, May 1968, p.189–200.

GRANT, G.
Information 'fall-out' for industry from patent specifications.
New Technology, no.22, November 1968, p.4–5.
Describes the indexing system developed by the Patent Office and the search system based on its Classification Key.

MARZA, IOAN
Un sistem cu fişe perforate marginal.
Studii şi Cercetări de Documentari şi Bibliologie, vol.10, no.2, June 1968, p.153–62.
An edge-notched card system for coding data on rocks and minerals is described and illustrated.

TREU, SIEGFRIED
The browser's retrieval game.
American Documentation, vol.19, no.4, October 1968, p.406–10.
Giving an association function to every pair of terms in the vocabulary allows browsing and the formulation of more specific queries.

CHOROSZUSZYNA, JADWIGA, *and* MARKOWSKI, TADEUSZ
Indeks permutacyjny typu KWOC.
Aktualne Problemy Informacji i Dokumentacji, vol.13, no.4, 1968, p.9–12.
A KWOC-type permuted index for the periodical *Przegląd Piśmiennictwa i Zagadnień Informacji*.

BURKETT, JACK, *comp.*
Post co-ordinate indexing: a survey of feature card systems in use in the UK.

In BURKETT, JACK, *ed.*
Trends in special librarianship, 1968, Appendix 1, p.161–81.

CUIBUS, ILEANA, *and* CURTICEAN, DOINA
O experienţă de aplicare a metodei de indexare coordonata . . .
Studii şi Cercetări de Documentare şi Bibliologie, vol.10, no.2, June 1968, p.143–52.
An experiment in the application of co-ordinate indexing in the bibliographical field; development of a list of descriptors; information retrieval by the system.

BRISNER, ODD
Versuche mit einem Prekoordinierungsindex . . .
Nachrichten für Dokumentation, vol.19, no.5, August–September 1968, p.173–5.
Experiments with a pre-coordinate index as a basis for the maximum use of internal and external sources of knowledge, and intracompany information services.

STOLARSKA, EWA
Automatyczne redagowanie indeksów na maszynie matematycznej . . .
Aktualne Problemy Informacji i Dokumentacji, vol.13, no.4, 1968, p.13–17.
Automated editing of indexes with a computer. Programme for the computer URAL-2 at the Polska Akademia Nauk.

JOSSELSON, HARRY H.
Research in machine translation: Russian to English. Detroit, Mich., Wayne State University, 1968.
16 p. (AD 670 951.)
1 microfiche.

KONO, SUSUMU
Mathematical linguistics and automatic translation. Cambridge, Mass., Harvard Univ. Computation Laboratory, 1968.
291 p. (PB 178 749.)
5 microfiches.

Information Processing and Systems

DEVELOPMENT and demonstration of information system data schedules. Burlington, Mass., Information Management Inc., 1968.
176 p. (PB 178 527.)
3 microfiches.

WHITTENBURG, JOHN A., *and* SCHUMACHER, ANNE W.
An information system planning guide: preliminary development and checkout. Alexandria, Va, Whittenburg, Vaughan Associates Inc., 1968.
Var. pag. (PB 177 601.)

INFORMATION retrieval.
Bulletin of the British Society of Rheology, no.2, 1968. Special issue, 75 p.
Contributions include papers on classification and thesaurus construction.

ASHWORTH, WILFRED
Information retrieval and what to do about it.
Bulletin of the British Society of Rheology, no.2, 1968, p.4–11. Also published in *Physics Bulletin*, vol.19, August 1968, p.262–4.

BROWN, PETER
The handling of information.
B.N.F. Information Bulletin, no.2, October 1968, p.34–46.
Need for increased use of computers is stressed, with descriptive examples of some existing systems, e.g. KWIC indexing and MEDLARS.

SALTON, GERARD
Automatic information organization and retrieval. New York, McGraw-Hill, 1968.
514 p., diagrs.

MIKHAILOV, A. I.
The role of a computer in scientific and technical information.
I.A.G. Quarterly, no.1, 1968, p.25–32.
Discusses problems of automatic information retrieval with a view to centralized scientific and technical information systems.

COMPUTERIZED information retrieval.
Chemistry in Canada, September 1968, p.48–9.
Mentions some statistics relative to the growth of *Chemical Abstracts* and the CAS computer-based information service due to operate by mid-1969.

NELSON, CARL E.
One facet of information handling.
Educom, vol.3, no.4, September 1968, p.4–5.
Briefly describes the storage and retrieval of information by means of computer tapes or disks, and in particular the Charactron cathode-ray-tube method, the co-ordinate-matrix method and the electron-beam-recorder method.

POLLOCK, STEPHEN M.
Measures for the comparison of information retrieval systems.
American Documentation, vol.19, no.4, October 1968, p.387–97.
Analyzes a measure of IR effectiveness based on recall and relevance ratios.

KATTER, DENNIS A., *and others*
National traffic safety documentation center project definition study. Falls Church, Va, System Development Corp., 1968.
204 p. (PB 179 156.)
4 microfiches.

HOMER, EUGENE D.
A mathematical model of the flow of data in a management information system, vol.1. New York, New York Univ., Dept Ind. Engng. & Op. Res., 1968.
160 p. (AD 671 949.)
3 microfiches.

KOCH, WILLIAM H., *and* HERSCHMAN, ARTHUR
A network for physics information. New York, American Institute of Physics, Information Division, 1968.
16 p. (ID68–13.)
Paper given at American Society for Information Science meeting, Columbus, Ohio, 28th October 1968.

STRUMWASSER, M. J., *and* WESSEL, A. E.
Progress report and current system description: US Patent Office/Rand experimental patent search system. Santa Monica, Calif., Rand Corp., 1968.
32 p. (AD 671 111.)
1 microfiche.

SCHEFFLER, F. L.
Indexer performance analysis and operations of a document retrieval system. Wright-Patterson Air Force Base, Ohio, Air Force Materials Laboratory, 1968.
iv, 84 p. (AD 666 462.)

BAKER, NORMAN R., *and* NANCE, RICHARD E.
The use of simulation in studying information storage and retrieval systems.
American Documentation, vol.19, no.4, October 1968, p.363–70.
Paper presented at the 32nd National Meeting of the Operations Research Society of America, Chicago, 1st–3rd November 1967.
Summarizes existing simulation studies and describes a preferred model now in use to study departmental university libraries.

COTTRELL, WILLIAM B.
Evaluation and compression of scientific and technical information at the Nuclear Safety Information Center.
American Documentation, vol.19, no.4, October 1968, p.375–80.
The Center attempts to evaluate information and disseminate it as state-of-the-art reports and in its journal, *Nuclear Safety*.

Communication and Knowledge

MAJOR, EDWARD
A Guide to good chairmanship: a manual of procedure at deliberative gatherings. Newton Abbot, David & Charles, 1968.
64 p. 10*s* 6*d*.

TRANSMITTING data by telephone line.
Office Equipment News, November 1968, p.18–20.
Describes GPO Datel and Telex services.

Professional Activity

WHATLEY, H. ALLAN
Library Science Abstracts, 1950–1968: retrospect and prospect.
Library Association Record, vol.70, no.11, November 1968, p.278–9, 286.

*LIBRARY ASSOCIATION
Five years' work in librarianship, 1961–1965, edited by P. H. Sewell. London, the Association, 1968.
viii, 656 p.

PEEL, BRUCE, *ed.*
Librarianship in Canada, 1946 to 1967: essays in honour of Elizabeth Homer Morton. Ottawa, Canadian Library Association, 1968.
165 p.

SHAFFER, DALE EUGENE
The maturity of librarianship as a profession. Metuchen, NJ, Scarecrow Press, 1968.
166 p.

FARRADANE, J. E. L.
Information science—bridging the gap in communication.
Quest, no.4, March 1968, p.15–18, 32.

SARACEVIC, TEFKO
Linking research and teaching.
American Documentation, vol.19, no.4, October 1968, p.398–403.
Description of a laboratory course resulting from a research project on test and evaluation of retrieval systems undertaken at the School of Library Science, Case Western Reserve University.

BROMBERG, ERIK
Education for special librarianship: a curriculum proposal.
Special Libraries, vol.59, no.8, October 1968, p.646–7.
A suggested curriculum for training a graduate for work in a scientific special library.

ASHEIM, LESTER E.
Education and manpower for librarianship: First steps toward a statement of policy.
A.L.A. Bulletin, vol.62, no.9, October 1968, p.1096–1106.
Outlines possible classifications of library personnel, defines professional and non-professional workers and discusses appropriate levels of education.

CASE WESTERN RESERVE UNIVERSITY. Center for Documentation and Communication Research
Education for hospital library personnel: continuation of feasibility study for continuing education of medical librarians. Cleveland, Ohio, the Center, 1968.
Var. pag. (Interim report no.2.)

BURKETT, JACK, *and* WARD, PATRICIA LAYZELL
A survey of advertised vacancies in special libraries and information units.
In BURKETT, JACK, *ed.*
Trends in special librarianship, 1968, p.183–200.

WALDON, FREDA F.
The C.L.A. (Canadian Library Association) —the first twenty years.
In PEEL, BRUCE, *ed.*
Librarianship in Canada 1946–1967, 1968. p.22–37.

*INTERNATIONAL library directory: a world directory of libraries; 3rd ed. 1969–70, [edited by] A. P. Wales. London, A. P. Wales, 1968.
1222 p.

*SCOTTISH LIBRARY ASSOCIATION *and* LIBRARY ASSOCIATION. Reference, Special and Information Section
Library resources in Scotland, edited by Colin Smith and Robert S. Walker. Glasgow, Scottish Library Association, 1968.
viii, 107 p.

SCHICK, FRANK LEOPOLD, *ed.*
North American library education directory and statistics 1966–68. Co-sponsored by American Library Association, Library Administration Division and the University of Wisconsin–Milwaukee School of Library and Information Science. Chicago, Ill., American Library Association, 1968.
xii, 106 p.

LIBRARY ASSOCIATION. Reference, Special and Information Section. *Yorkshire Group*
Library resources in Yorkshire, edited by Janet Bromley, 3rd ed. London, the Section, 1968.
79 p.

FYFE, JANET, *and* DEUTSCH, RAYMOND H.
Directory of special collections in Canadian libraries. Ottawa, Canadian Library Association, 1968.
2 vols., 500 p. (Occasional Paper No. 58.)

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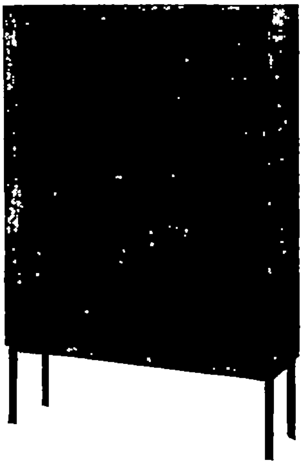

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Volume 21 **February 1969** **Number 2**

ASLIB CALENDAR 1969

March

FRI.21 – SAT.22.	Symposium: Accelerating innovation. Nottingham University, Lenton Hall.
TUE.25.	Midlands Branch annual general meeting. Birmingham.
WED.26.	Evening meeting at Aslib. Organizational aspects of information flow in technology, by Professor T. J. Allen. 5 for 5.30 p.m.
FRI.28.	Scottish Branch annual general meeting. Northern Branch annual general meeting.

April

THU.10 – SAT.12.	Northern and Midland Branches joint conference. Oxford.
FRI.11 – SUN.13.	Aeronautical Group annual conference.
TUE.15 – THU.17.	Chemical Group Conference: Commercial and marketing information.
WED.23.	Third Aslib Annual Lecture. Expert and layman in contemporary society; problems of function and communication, by the Baroness Wootton of Abinger.

May

THU.15.	Engineering Group conference. Birmingham.

September

SUN.21.	43rd Annual Conference, Coventry.

Third Aslib Annual Lecture

The Baroness Wootton of Abinger will deliver the third Aslib Annual Lecture on the evening of Wednesday 23rd April 1969 in the William Beveridge Hall at the Senate House of the University of London. The title will be 'Expert and layman in contemporary society: problems of function and communication'. Lord Shackleton will be in the Chair. Admission will be by ticket only.

Lady Wootton will speak on the rapid advance of science and technology which results in the layman making use of articles and services (e.g. motor cars or medical treatment) about the functioning of which he may be totally ignorant. In such cases the authority of the expert is not challenged, but there are urgent problems of communication yet to be solved.

The progress of the social sciences, on the other hand, leads to uncertainty as to the respective spheres of expert and layman, with a tendency for the former to encroach on the latter. In the administration of justice this affects the future of the lay magistracy and the jury system. In political life it raises the questions as to the proper content of political discussion, the role of Ministers and of MPs and the organization of the Civil Service.

Application forms are being distributed with this issue of *Aslib Proceedings* and tickets will be sent on application to the Meetings Organizer, Aslib, 3 Belgrave Square, London SW1.

Chemical Group AGM

The annual general meeting of the Chemical Group will be held in the congenial atmosphere of the Rembrandt Hotel, Thurloe Place, SW1 on Wednesday, 5th March 1969 at 11.15 a.m. It will be preceded at 11 a.m. by an extraordinary general meeting to approve and adopt a new Constitution.

The Rembrandt Hotel is well known for its cuisine and the Group has taken full advantage of this for the Annual Luncheon. Wine will be served gratis during the meal.

In the now-well-established tradition, the lunch will be followed at 2.45 p.m. by the Annual Lecture. The speaker will be Mr F. L. A. Handovsky of Esso International, Brussels. Mr Handovsky, who speaks excellent English, will project us information-wise into the year AD 2000.

The cost of the luncheon including gratuities, is £2 2*s*. Cheques should be made payable to the Aslib Chemical Group and sent to Miss F. M. Baker, Hon. Treasurer, c/o Shell Research Limited, P.O. Box 11, Egham, Surrey. (Tel. Egham 4422.)

Mr J. R. Stocks

We are sorry to announce the resignation of Mr J. R. Stocks from the Council of Aslib on account of his transfer from information work to personnel services within the Shell Organization. Mr Stocks, who was Head of Central Information Services at Shell Centre, London, had been a member of Council almost continuously since 1955. He was Deputy Chairman in 1964 and Honorary Secretary of Aslib 1965–68. Aslib wishes him a happy and successful future in his new work.

Engineering Group

The Committee (with the agreement of the Northern Branch of Aslib) is planning a conference in the North (probably Manchester) during 1969 and would be glad to hear from any interested potential speakers. There will be no particular theme, and the conference will probably be on a Thursday to a Saturday in July. Papers should deal with some aspect of library or information work in engineering, might well have a regional interest, and could be of any length from fifteen to forty-five minutes. Anyone prepared to present such a paper should send the title, a summary, and the estimated length to the Hon. Secretary, Miss E. D. Norman, Fluor (England), Ltd, 26 Finsbury Square, London EC2, as soon as possible.

It is hoped that the conference will include visits, and any technical library or information department willing, in principle, to receive a visit is also asked to contact Miss Norman.

Information Systems in Physics, Electronics and Control (INSPEC)

Already in 1967 the Institution of Electrical Engineers announced that from January 1969 all INSPEC publications (*Science Abstracts* and the corresponding three *Current Papers*) would be produced by a computer-aided system. They have kept their word—the fortnightly issue of *Physics Abstracts* (2nd January 1969) was available in the first week of January. We hail this as a Cis-Atlantic achievement and congratulate the Institution on their success!

The main step in developing INSPEC as a comprehensive information service, based on the computer control of references and abstracts, has thus been taken. It has involved the design of a special keyboard and a character set of around two hundred symbols. Programs have had to be written for the computer (ICT 1901) composition system for converting printed text into lines and pages and for producing magnetic tape to drive the Lumitype 713 Filmsetter. Similarly, the organization of a wide range of indexes for each issue (author, report number, conference proceedings, books and bibliographies) from the computer-stored references had to be programmed.

From the feasibility study in 1965 it has taken about four years, and that is probably as fast as any pioneer computerized system of this complexity can be put into operation.

Chemical Group course in polymer technology

A two and a half day course in Polymer Technology is to be held at Whitworth Hall, University of Technology, Loughborough, from 17th to 19th June inclusive. The course will commence at 9.15 a.m. on the Tuesday morning (17th June) and will continue to mid-afternoon on Thursday 19th June. The University is charging a course fee of 21 guineas, which will include full board for the whole of the period, i.e. three nights and all meals.

The course has been organized by the Aslib Chemical Group in conjunction with Professor R. J. W. Reynolds of the University. It has been designed primarily for Information Officers and Librarians not familiar with the terminology of polymer science.

Further details about the course, syllabus and registration are available from

Dr H. C. Evans, Shell Research Limited, Library, Carrington Plastics Laboratory, Urmston, Manchester. (Tel. IRLAM 2601.)

UNISIST

The joint ICSU/Unesco Project on the Communication of Scientific Information (UNISIST) set up more than a year ago (see *Aslib Proceedings,* January 1968, p. 2) now has a number of active working groups studying and reporting on special aspects of this broad field.

The inaugural meeting of the Working Group on Scientific Information in Developing Countries was held at Aslib on 7th and 8th January. In welcoming the members of the Group, the Director, Mr L. Wilson, pointed out that Aslib has a live interest in development outside the United Kingdom, particularly as its own membership includes nearly seven hundred corporate bodies in over seventy countries overseas. At the moment Aslib is looking into the possibility of adapting some of its short intensive courses for English-speaking countries of Africa, as, for example, Ghana and Nigeria.

The main items discussed by the Working Group were:

(*a*) User needs and the education of users of scientific and technical information

(*b*) The organization and functions of regional centres, especially the co-operative handling of periodicals and reports, shared cataloguing and mechanization

(*c*) Training and status of information personnel

(*d*) Barriers to the free flow of information arising from Customs and other administrative regulations

(*e*) National policy for information in relation to scientific research and development

The Working Group consisted of the following members:

J. C. Green (USA), C. Keren (Israel), I. Malecki (Poland), C. I. O. Olaniyan (Nigeria), A. M. Sandoval (Mexico), J. R. Smith (IEE as Observer from the Advisory Panel of UNISIST), H. Coblans (Chairman), A. Pérez-Vitoria and M. Doporto (Unesco Secretariat).

NRLSI Appointment

The Trustees of the British Museum announce that they have appointed Mr M. W. Hill, MA, BSC, ARIC, to be Keeper of the National Reference Library of Science and Invention.

Mr Hill, a chemist, was with Laporte Chemicals Limited and the Morgan Crucible Group before being appointed to the Museum in 1964. In 1965 he became Deputy Librarian of the Patent Office Library, which is now the Holborn Division of the NRLSI.

CIRIA in the Midlands

The Construction Industry Research and Information Association has announced the opening of its Birmingham Regional Advisory Office at the Engineering and Building Centre, Broad Street, Birmingham 1. (Tel. 021-643 8961.)

Indexing languages—symposium

A one-day symposium on indexing languages in use in special libraries will be held at Ealing Technical College from 9.30 to 5 p.m. on Wednesday 26th March.

Topics will include practical problems and experience in the use of the UDC, faceted classification, post-co-ordinate indexing by optical coincidence and by computer.

Further information may be obtained from Mr J. Burkett, School of Librarianship, Ealing Technical College, St Mary's Road, London W5.

Review of the *Anglo-American Cataloguing Rules, British Text*

The Library Association Cataloguing and Indexing Group has set up a Cataloguing Rules Sub-Committee to keep under review all proposals for amendment and change in the *Anglo-American Cataloguing Rules 1967, British Text* on behalf of, and by arrangement with, the Library Association's Research Committee, the body primarily responsible for the original text on this side of the Atlantic.

The Sub-Committee is attempting to establish a register of users of the new cataloguing code, in its British version, so that questions relating to the revision of rules can be put from time to time, and so that practice in relation to the code can be studied for evidence of the need for, and effects of, changes. Libraries of all kinds are therefore urged to send information of all their major decisions of policy and practice in respect of the *Anglo-American Cataloguing Rules* to the Chairman of the Cataloguing Rules Sub-Committee, Mr P. R. Lewis, FLA, at the Queen's University School of Library Studies, 2 College Gardens, Belfast BT9 6BQ, Northern Ireland.

The National Union Catalog. Pre-1956 imprints

This unparalleled bibliographical venture has already been discussed in the form of a review (*J. Doc.*, *24* (3), 1968, p. 223) of the Prospectus which was issued in 1967. The first five volumes covering part of the letter A have now appeared (November 1968). The next fifty-five volumes will be published in groups of five during the coming eighteen months. From 1970 five volumes will be published each month until the 610 volumes are all out. This will then represent 12¾ million entries.

'Mansell's unique photocopy process enabled the . . . (creation of) a new format which eliminated from the published Catalog extraneous matter on the cards and added uniform location symbols and unique serial numbers.' Thus the National Union Catalog of the Library of Congress has been converted from card to book form.

The scope of the bibliographical record thus created can be seen by comparing entries for typical authors in this Catalog and the printed British Museum Catalogue. Thus for 'Aesopus' there are more than twice as many, 1,464 as compared with 706.

The British printers Messrs Balding and Mansell are to be congratulated for the successful appearance of these well-produced and eminently usable volumes.

Journal of Librarianship

We have much pleasure in welcoming a new periodical in the fields of librarianship and documentation. The Library Association has given very cogent reasons for launching this learned journal. 'In the years since the end of the second world war . . . there have been significant developments . . . in the United Kingdom. Improvements . . . in the field of public libraries, . . . the development of libraries as part of the expansion of higher education. . . . The spectacular growth of the NLL . . . the problems at present confronting the British Museum Library are examples of possibilities and problems on a national scale.'

As a quarterly dealing with all aspects of library and information work in the United Kingdom and abroad it is intended to be complementary in a broad sense to the *Journal of Documentation.* Although there is considerable overlap and interpenetration in the two traditional fields, presumably the older journal will continue to stress the more specialized research aspects and the new journal will concentrate more on the broader issues.

The first number which appeared in January clearly indicates the policy of this quarterly—four longish articles which in a non-hurried way does justice in depth to reports and investigations and historical analyses, and an exhaustive book review which is a contribution to a whole subject.

UDC for Transport

The latest part of the English Full Edition of the Universal Decimal Classification to be published by BSI is BS 1000 (656/656.7) *Transport services, traffic organization and control.*

This new section forms part of the full edition and comprises a systematic schedule with an alphabetical subject index for the classification of matter pertaining to the organization, management and operation of land, water and air transport services. It provides for such aspects as routes and timetables, traffic studies, tariffs, ticket issue and control, disruptions, liability of operator, traffic control and vehicle operation, types of service and administration, accidents and damage, and various documents, e.g. certificates and licences.

Copies of BS 1000 (656/656.7) may be obtained from the BSI Sales Office at 101/113 Pentonville Road, London N1. Price 20*s* each. (Postage 1*s* extra to non-subscribers.)

Aslib Information Services in Documentation and Information

During the last year considerable effort has been devoted to preparing the ground for the provision by Aslib of a more comprehensive information service in the documentation field. Since this will be based on the Aslib Library, initial steps included rationalization of library routines, overhaul of the code of practice for using the classification and the preparation of a new subject index for the catalogue. The criteria for selection of material were defined to provide greater coverage, particularly in regard to the practical applications of information science in specific subject fields, including not only scientific and technological disciplines but management, commerce, marketing and the arts.

From this basis both retrospective retrieval and current awareness services are being developed. Aslib is now contributing about 50 per cent of the material for the new abstracting journal, *Library and Information Science Abstracts*, the scope and coverage of which will be considerably greater than that of *LSA*. In 1968 improvements were made in the provision of a broad current awareness service by increasing the number of entries in *Aslib Proceedings* and by a much more generous use of annotations. From January 1969, these entries are arranged in categories to aid selectivity, as many users are becoming increasingly specialized in their field of interest.

The next logical step, for which plans are now being formulated, is to provide a selective dissemination service in this field, based on a thesaurus developed by the Aslib Research Department. The preliminary work on the design of profiles and programmes for this service is expected to begin shortly, and will probably occupy the greater part of 1969. To ensure the success of such a development it is essential that the foundation be properly laid and this will almost certainly include an experimental period with a limited number of users.

For all these developments the Aslib Library will provide a backing-up service, making photocopies available in response to requests for any item included in the retrospective retrieval or current awareness service.

Library and Information Science Abstracts

The first issue of a new bi-monthly service to librarians, documentalists and information scientists, *Library and Information Science Abstracts*, will appear on 28th March, covering material received in January and February. The new journal will replace *Library Science Abstracts* and will provide more substantial coverage of literature in foreign languages including Afrikaans, Arabic, Japanese, Russian and Serbo-Croat.

The material covered will include periodical articles, reports, conference papers and pamphlets, and there will be an average of 400 abstracts per issue drawn from 371 periodicals.

The arrangement is to be classified, which will make both broad and specific searches easier. Added to this there will be author and subject indexes to every issue, with annual cumulations.

Library and Information Science Abstracts will be published by the Library Association, the compilation being a joint effort with Aslib, which will deal with the information science contributions. At a cost of six guineas per year this is one of the more inexpensive abstracting services now available to research workers. Photocopies of original material may be obtained from the libraries of Aslib and the Library Association.

Communications in the R. & D. Laboratory: Evening Meeting

At the evening meeting on Wednesday 26th March 1969 members will have an opportunity to hear Professor T. J. Allen of the Massachusetts Institute of Technology speak on the structure of communication networks in the research and development laboratory. Principal points in the analysis will include an inspection of factors which operate to determine communication network structure, and the development of key roles in the network. Considerable attention will be given to the parameters which will allow the tailoring of network structure to meet an organization's peculiar needs.

The meeting will begin at 5.30 p.m. (tea 5 p.m.).

Proposed Social Sciences Group

From the number of inquiries received at Aslib recently, it would appear that there might be sufficient interest among members to justify the creation of an Aslib Subject Group concerned broadly with the Social Sciences and covering organizations in the fields of law, public administration, education, welfare, etc. Members interested in this proposal are asked to write to the Assistant Director (Services), Aslib, 3 Belgrave Square, London SW1, saying which field of activity they represent.

Scottish Branch

The annual general meeting and conference of the Scottish Branch will be held this year at the Metropolitan Hotel, Falkirk, on Friday 28th March.

The speakers will be Dr A. Kent, on aspects of the Nottingham Chemical Literature Project, Dr W. Steedman (Heriot-Watt University), on 'A User's View of the Nottingham Project', and Dr D. A. Lewis (ICI Plastics Division), on the utilization of chemical literature in the plastics industry.

Full particulars (with registration form) are available from the Honorary Secretary, Mr W. H. Rutherford, Assistant Secretary and Librarian, Royal Society of Edinburgh, 22 and 24 George Street, Edinburgh 2.

Anne Elphick

Anne Elphick has asked to have her warm thanks expressed to all those members of Aslib who so very kindly contributed to her retirement present last year, but to whom she has not been able to reply. She wishes them to know how much she appreciates their generosity and kind thoughts, and that the money is being spent on luxuries for the garden and the house, which will be lasting reminders of her many friends. She hopes too that at least some of them may find their way to her part of Somerset for a visit. There will be a warm welcome.

ASLIB ENGINEERING GROUP

Chairman: Dr D. J. Campbell (Pressed Steel Fisher Ltd)
Vice-Chairman: Mr M. Hill (National Reference Library for Science and Invention)
Hon. Secretary: Miss E. D. Norman (Fluor (England) Ltd)
Hon. Treasurer: Mr D. Whale (Tube Investments Ltd)

Since the Group was reactivated in 1963 it has tried to serve Aslib members in all kinds of engineering, except those catered for by other Groups. The Group has not confined its activities to London. Meetings have also been held in the Midlands and it is hoped to extend this to the North. The Committee has representatives from the Midlands, the North and Scotland.

The principal objects are to provide a forum for discussing problems of information and library work in engineering, the increase of contacts between members, and the holding of conferences with other bodies, when a subject of joint interest is ripe for discussion. The Committee feels that the Group covers too wide a field for 'project work' to be feasible, and that this can best be done by smaller and preferably industry-orientated groups.

Much effort over the last two years has been given to the problem of convincing engineers of the need for better information services. For example, early in 1968 the Group planned a two-day conference as a meeting ground for engineers and information officers to hear each other's viewpoints. With the help of Aslib, the interest of the Council of Engineering Institutions was enlisted. The CEI, which is the co-ordinating body for the fourteen constituent engineering institutions, favoured reducing the conference to one day, and asked the Institution of Mechanical Engineers to undertake the arrangements, which were supervized by a joint CEI Aslib committee. The conference was held at the Institution of Mechanical Engineers on 10th October 1968, and was attended by 286 persons, 41 per cent of whom were engineers or scientists, 33 per cent information workers, and the rest editors, writers, administrators, students, representatives of commercial information services, etc.

In the morning Mr C. W. Hanson described the information services available and five information scientists and librarians each described one or two enquiries they had dealt with, how they were tackled, and what the value of the results was. (This idea, never tried before, could be developed in other such meetings.) In the afternoon several engineers dealt with the information needs of the engineer. The discussion was not as useful as had been hoped, mainly for lack of time, and showed some tendency for engineers to assume that being engineers also made them experts in information retrieval and dissemination. The Group Committee is considering, with Aslib and other bodies, how to follow up this partial success. Meetings have also been held on particular aspects of engineering.

A successful conference was held at Leamington in 1966 on 'Standards, Standardization and Standard Engineering' which was attended by many standards engineers and allowed each side to learn more of the other's work and needs. This was followed up by an even more successful conference on 'Industrial Classification and Coding', in London on 1st February 1967, which was attended by one hundred and ten people, many of them standards engineers and coding experts.

Another co-operative conference was held in London in January 1968 in conjunction with the Hospital Physicists' Association and the Biological Engineering Society, on 'Biomedical Engineering.' Over forty attended.

In 1969 the Group plans to hold a two-day conference in October, jointly with the Construction Industry Research and Information Association on 'Information Services for the Construction Industry', and a conference on 'Government Supported Information Centres' at the University of Aston in May. Other plans are also afoot, including a possible conference on commercial information services in engineering.

Several evening meetings a year are also held. Recent subjects have included data sheets and their presentation, the role of the information officer in company-wide information service, recent developments in modern production techniques, and the microfiching of periodicals.

The Group has a membership of nearly two hundred but could be more effective with a larger active membership. Committee service is limited to six years at a stretch and there is always room for keen workers on the Committee. Members of Aslib who wish to join the Group should notify Aslib. Those who seek more information, or have ideas for activities should write to the Hon. Secretary, Miss E. D. Norman, Librarian, Fluor (England) Ltd., Finwell House, 26 Finsbury Square, London EC2.

INFORMATION SERVICES AND MARKET RESEARCH

DR D. W. HILL
Shirley Institute

Chemical Group/ECMRA Conference on Commercial Intelligence, Tuesday 12th November 1968

WHEN, some months ago, I was asked to prepare a paper for this conference it was suggested to me that the conference would discuss the problems associated with the location of sources of unpublished information, how information sources could best be exploited in market research work and, in particular, the role of the research association as a focal point for information. This is a wide enough limit for anybody and immediately raises certain questions.

In the first place, what do we mean by unpublished information? Do we mean that it has not been printed and issued to the public in a readily available form such as a scientific, or technical paper or a set of statistics, or do we mean that, although it is available, the person needing it is unaware of its existence? In the sense of being unpublished is it personal knowledge locked away in the brains of individuals who are, perhaps, themselves not aware that it is useful or, since it is market research that we are discussing and therefore something of economic and commercial value, are sufficiently aware of its value not to disclose it to others?

Secondly, what kind of information is it that we are seeking? Is all information valuable to the market researcher or are certain kinds of information more valuable than others? Can we, in fact, define the information needs of the market researcher? And how sophisticated are his requirements?

Unless and until we can answer these and, possibly, several other questions we shall continue to be faced with the problems, without finding solutions and shall be unable to decide whether the research associations and other specialized organizations have a particular role to fulfil. One thing, I think, must be clear even to the most casual observer, namely, that market research is an interdisciplinary activity. In recent years we have become accustomed to inter- or multi-disciplinary activities in science and technology as work has been carried out increasingly at the interfaces of two or more well-defined subjects. In such instances, though there may be little or no information available on the subject under study, the contributing sciences are usually well documented and codified. It becomes then a matter of synthesizing information from apparently unrelated sources—shall we say biology and physics—into a coherence valuable at the border line. Usually, though not invariably, the field is relatively narrow and the available information, even if insufficient in itself, can be traced without too much difficulty. Market research must draw upon such a wide diversity of information that to be expert in all areas is unlikely, and much of it, though available, may very well be uncodified. It is, in fact, precisely because market research is a multi-disciplinary activity that the problem of information sources arises. The information even when located is not necessarily in the form required, having been produced for some other purpose. It may be desirable to have statistics on populations, incomes, production, imports and exports and having got these it may be necessary, and much more difficult, to try to interpret them in terms of local customs and usage, history and tradition or even religion. In certain tropical countries clothing is traditionally white, in others, black, and no amount of statistical information alone will enable anybody to sell anything else. In certain African countries where calico prints are popular the designs and colourings are decided by traditional considerations. Differences of taste usually occur at tribal boundaries. The bright reds and oranges popular with the Warri tribe in mid-Western Africa would be entirely unacceptable to the Yoruba tribe, the members of which prefer sober prints of black and green. It may be necessary also to have technical information such as the availability of water supplies, or underlying geological formations, or average mean temperatures and the variation about the mean. I do not know but I am told that you need to be a salesman of exceptional ability to sell refrigerators to the Eskimos. Covers for the protection of goods in transit—wagon or railway covers in England—do not serve the same purpose in all countries. In a general sense they are all for protection against the elements but in England they are chiefly useful for protection against the rain whereas in tropical and sub-tropical countries they are for protection against the sun, and the same covers will not do. More than one cargo of fruit coming in barges down the Congo has been ruined because the barge covers were permeable to heat which got in, and impermeable to moisture, which could not get out.

In one sense, therefore, all information is valuable to the market researcher and at any one moment it may be difficult to distinguish the important from the unimportant. If you want to sell shirts in the United States it is not only necessary to know the size of the market and its distribution—for example, that there is more money in Texas than in New York—but also the sizes and shapes of American men which differ from those of Englishmen. It is not enough to know the quantity of the fabric you can supply; you must know too that the climate is different and that the fabric must be adaptable to it. It may also be useful to know that Americans like collar-attached shirts with two breast pockets (we usually have one) and that pastel shades are in this year and colour-woven stripes are out.

It is becoming apparent, I think, that there are two broad classes of information which the market researcher needs. The first we may call technical information and includes statistics of all kinds and technological knowledge of the sort which can be, and usually is, codified. This kind of information can usually be found if one is either sufficiently knowledgeable to know where to look or has access to sources which tell one where to look, and if one is prepared to expend the necessary effort to find it. The second, more general information, may be much harder to locate. It is unlikely to be codified in statistical tables or abstracts journals; it may well be ephemeral and it may be hidden away in a mass of unwanted and irrelevant material. In certain instances it may very well be available only to a limited number of persons who must be located and treated as source material.

It follows that there is no easy route to the discovery of information. Indeed, if there were, there would be no need for librarians, for information centres, nor indeed for Aslib itself. Only by effort, and directed effort at that, is it possible to locate first the sources of the information and then the information itself. It may involve consultations with known experts in the field, whether technical or otherwise. It may involve correspondence with acquaintances or even with strangers if they are thought likely to be helpful. It may be desirable to be in touch with colleagues possessing related or different specialized expertize upon which one can not only draw but upon which one can also sharpen one's wits to define what one is looking for. Even the technical information which has, in recent years, become increasingly codified and indexed to make search easier, may have considerable gaps. Statistical information, in particular, which is important for market research, is not so well organized as technological information. The Census of Production Reports in the UK are, for example, infrequent and long delayed. It may be pointed out at this stage that OSTI are financing a series of studies into the information needs of social scientists and including such fields as economics, economic history, human geography and business studies, all of which in greater or less degree should be of value to the market researcher.

Having tried briefly to analyse the problem of the market researcher's needs, what are the implications of what has so far been said. It seems to me that we are driven to the conclusion that substantial organizations devoted to information gathering and retrieval are essential for the purpose. With the best will in the world an individual cannot hope to explore for himself all the possible sources of useful information available to him, let alone search for those that are, at any point in time, unknown to him. It is a task for specialists in the location of information and for an organization which can document sources so that they can be recalled, even if they have been discovered 'by accident'. Experts in this field will record and hence will not lose sight of a source of information however discovered and whether or not the available information has any immediate relevance.

It is here that organizations like the research associations specializing in the needs of particular industries or the Ministry of Technology Regional Information Officers specializing in information location can assume an important role. The research associations, especially, to which the Regional Officers will often direct an enquirer, possess the necessary characteristics to provide the service required. Any organization purporting to provide information of the sort we have been discussing must possess these recognizable characteristics if it is to be truly useful.

It must, for example, already possess a store of expertize by which the information can be evaluated. The research associations, through their own research work, through their intimate contacts with the industry they serve, by their world-wide connections with related work and industries possess this expertize and by experience and constant usage have become adept in using it. They can, therefore, not only provide information to enquirers but can assess the level of its usefulness and can present it critically. They are equipped not only with valuable libraries staffed by recognized information officers but they have, too, specialists in all aspects of the technology with which they are concerned. The bigger ones also have economists and statisticians who have devoted their activities to the relation of these subjects to their own industries. There is available, therefore, a highly comprehensive system both for gathering information by all the known methods—conventional i.e. published and indexed material and unconventional, i.e. from personal contacts, from their own and others unpublished work, from hearsay carefully checked and a host of others, and for evaluating it.

The organization must also have an established two-way access, on the one hand to sources of information and, on the other, to potential users. In this the research associations are pre-eminent in that they have a system of membership and a communications network with the members which provides an established two-way route for information—both from the members as to their needs and to the members with the information to meet the needs. In one sense the single research association, though immensely better situated than an individual, still suffers the limitation of its own speciality and hence its own limited information gathering on the one hand and its limited clientele on the other. There are, however, some forty-eight research associations covering about two-thirds of productive industry and each constitutes a part of an intricate network of information sources covering this wide sector of industrial activity. The fact that my own organization, for example, would not claim to be expert in, shall we say, welding or shoe manufacture or paint, or plastics, or any one of a number of other specialist industrial activities does not preclude the members from access to information in these fields, any more than practitioners in the field are excluded from information on textiles or fibres. Intercommunication between the research associations on a mutual assistance basis is real and active. As individuals they are valuable in their own right; as part of a comprehensive network they are, I believe, incomparable.

Because they are centralized sources they act as concentrators of other diffuse sources rather as a lens concentrates a diffuse collection of light-rays on to a small spot for better illumination and because they are centralized and have this concentrating effect they are easily recognized as focusing points.

In principle, therefore, the research associations have all the characteristics necessary to an information source—they are collectors, disseminators, storers, retrievers, evaluators, concentrators and they can be recognized by all and sundry who are seeking information. But how, in practice, is this remarkable collection of attributes put into effect. Naturally, as research associations have developed differently, they also express their activities differently, or at least with different degrees of emphasis. To attempt to describe what they all do would be tedious and in so short a space, probably inaccurate. Let me tell you, therefore, what the Shirley Institute is doing which may be regarded as a fair reflection of others. From its earliest days—and we are now just coming to our Jubilee—the

Institute has had an extensive library (reputed to be the best and most comprehensive textile library in the world) and information bureau. It has published a fortnightly summary of the world's textile literature, not only scientific and technological but economic and statistical, and has made this available to the textile world through the Textile Institute's *Textile Abstracts*. Information to members on an individual basis and on request has, of course, always been freely available as is the case in the other R.A.s. The explosive growth of information and the development of increasingly sophisticated information systems have recently led to a re-evaluation of the role we should play in this field. With the co-operation of the other textile research associations the fortnightly summary, which was originally conceived as a service to our own staff, is being re-vamped to a new comprehensive textile abstract service available to members and non-members alike on a repayment basis. This new service is designed to start in January next. The abstracts will be so prepared and assigned key-words from a textile thesaurus that they can be used for computer storage and for the retrieval of information on demand. It is expected that this will become the international centre of textile information retrieval. Indeed, since it is a big and expensive undertaking, it would be wasteful for it to be otherwise. Because the demands of the industry are not restricted to the accepted sciences and technologies, there will be active collections of commercial information from brochures, advertisements, ephemeral publications, etc., within the appropriate technical departments and will cover fibres, textiles, chemicals, machinery, buildings and all the possible information that may be demanded at any time. These will be in appropriate departments because much of their value will depend upon a critical appreciation and upon the recognition of when they have been superseded by new or improved products and processes. In this way, not only the Information Department as such, but all the Departments and the individual research workers become potential suppliers of information, published and unpublished. A big and powerful information gathering machine will thus come into being and will undoubtedly gather momentum with time. It will work with and for other organizations both in the UK and abroad in order to increase the overall efficiency of world-coverage of information and end the present wasteful duplication of effort.

We expect this new machinery for information-gathering and disposal to take at least three years to work up to full pitch. We have had considerable encouragement from the Ministry of Technology and from the Department of Education and Science through OSTI for the project and we are hoping that in the initial expensive development period we shall receive financial support from these sources also. In due course, it is intended that the project will be fully self-supporting as more people come to realize not only that they need information but that the RA can find it for them more quickly and more economically than they could do for themselves.

SOURCES OF INFORMATION ON MARKET RESEARCH USED BY INDUSTRIAL LIAISON CENTRES TO ASSIST SMALL FIRMS

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Ministry of Technology

Chemical Group/ECMRA Conference on Commercial Intelligence, Tuesday 12th November 1968

A DISCUSSION of the various sources on market research used by Industrial Liaison Officers cannot be considered in isolation from the philosophy and operation of the industrial liaison scheme. This paper can therefore be considered to be in two parts, firstly that concerning the scheme itself and secondly the use of the various sources of information by the ILOs.

Development of the Industrial Liaison Scheme

The Industrial Liaison Scheme has been developed by the Ministry of Technology from earlier largely exploratory schemes as a means of providing advisory assistance to the smaller firm. Government, particularly the Department of Scientific and Industrial Research, were considering the information needs of the smaller firm as far back as the 1950s. The smaller company has an important role in the national economy. Statistics taken in 1961 show that 95 per cent of manufacturing establishments in Britain employ more than ten but less than five hundred employees and 51 per cent of the national labour force employed on manufacture, work for these smaller companies. In some industries the large firm is dependent on the smaller company for sub-contract facilities. In others it is the highly specialized product being produced by the smaller firm which is answering a particular industrial need.

There has been an increase of more than 30 per cent in the productivity of manufacturing industries during the period 1958 to 1965. The smaller firm must keep pace with, or improve on, this rising productivity if it is to be efficient and competitive. It is in this atmosphere that the industrial liaison scheme was conceived and developed.

In 1963 the Department of Scientific and Industrial Research and the Ministry of Education jointly approached the Treasury for approval to develop a national network of industrial liaison centres. The centres were to be positioned in various establishments for further education and would receive a substantial grant from government funds. Approval was granted and the Ministry of Technology, which had taken over responsibility for the scheme on the dissolution of the Department of Scientific and Industrial Research in 1965, continued to develop the scheme. At the present time we have seventy-five centres and eighty industrial liaison officers in post. Normally there is an officer and secretary at each centre but it has been necessary to double-man in five centres because of the high industrial density in the locality. The yearly cost of the scheme comes to approximately one-third of a million pounds, of which two-thirds are from Ministry of Technology funds.

Functions of Industrial Liaison Officers

The functions of the officers based in these centres are to visit small- and medium-sized firms; firstly, to provide practical assistance to industry in framing inquiries and to direct companies to the most suitable sources of assistance that are available to overcome particular problems; secondly, to promote in local industry an appreciation of the advantages of adopting new technological and managerial methods and to generally stimulate innovation within these firms; and thirdly, to encourage the maximum and effective use of local and national scientific, technological, managerial and commercial advisory sources and of the resources of the college on which these centres are based.

The present situation is that each officer is responsible, on average, for assisting some seven hundred to one thousand firms in his area, though, of course, this number is very dependent on geographical and other local conditions.

The Day-to-day Work of Industrial Liaison Officers

Visiting is considered of prime importance in the work of these officers. It is through the discussions that take place between the company and the industrial liaison officers that the most beneficial effects of the scheme can be detected. The officer can stimulate within the firm the use of many techniques, both technological and managerial, of which the firm may previously have been unaware or have been reluctant to use. Problems previously regarded as insoluble can be reviewed and new methods of treatment suggested. A standard approach to a problem, which a large organization may regard as a normal approach, is frequently rejected by the smaller company for lack of expert guidance.

A thorough discussion of a problem with an unbiased visitor, who has nothing to sell, often is beneficial to a company even though no further action may be required from the industrial liaison officer.

The industrial liaison officers are already carrying out, on average, nine thousand visits to industry each year. This figure will be considerably increased as the scheme develops and our newly appointed officers are established in their working routine. The rate of visiting is, of course, affected by the number of inquiries received at the centres.

Inquiries are taken in two ways—during industrial visiting and by letter, telephone and visits to the centre. As the centre becomes widely known in the area, the pattern of inquiries received changes and those taken on the visits are outpaced by those received directly to the centre. The inquiries are many and varied and are concerned with a wide range of science and technology. Examples of the types of assistance requested can vary from the development of new test equipment for the petroleum industry to job evaluation studies in a television repair factory, from assistance in the aesthetic design of a consumer product to the translation of sales literature into Russian. The range is very wide.

An industrial liaison officer does not act as a consultant. One of his chief functions is to be a specialist in sources of information and assistance, their value and appropriateness for a particular assignment. He is responsible for introducing industry to a wide range of sources, including the greater use of existing library services, research associations, development and trade associations, and government departments. The industrial liaison scheme pays particular attention to the frequently occurring need to discuss with a firm the real nature of an inquiry or problem. Most information officers here today can testify that the problem presented is frequently not the actual cause of trouble being experienced by the inquirer.

The industrial liaison service operates in a manner not normally used by conventional information services. Overall, approximately 20 per cent of the inquiries are handled by the lecturing staff of the technological institute on which the centre is based. The assistance provided by college and university staff has substantially increased over the period of the operation of this scheme and is still increasing. This assistance would previously have largely been lost to industry due to the difficulty of tapping into the poorly known resources of educational institutions.

Equally there are many other excellent information services, both national and local, whose functions and facilities are often unknown to the smaller firm.

The cost of the industrial liaison officer's time in identifying the problem, locating the most suitable source of advice, arranging the introductions and monitoring the progress of the inquiry, is not charged to the firm. Indeed, it has been found that many of the more simple problems are also answered without cost by the advisory sources introduced by the centres. Naturally, when more extensive projects are required, charges are made by the consultants at fees previously agreed between the inquirer and the adviser.

The service has handled over forty thousand inquiries since it started and is currently processing fifteen thousand inquiries each year. A recent analysis of these inquiries has indicated that the major users are the engineering industry (37 per cent), the electronics and computer industry (13 per cent), and the chemical industry (8 per cent).

ILO Assistance with Marketing Problems

Originally it was envisaged that the industrial liaison scheme would be a service concerned almost solely with technical problems. However, a growing number of problems are received at the centres which are management in character. Currently, inquiries concerning management techniques or problems account for 17 per cent of all problems received at the centres. These management inquiries include those concerned with market research. It is generally the medium-sized companies that make the most effective use of industrial liaison centres on market research problems, though some smaller companies have posed some interesting problems. A typical example is a proprietor of a local garage who approached the ILO with a problem concerning falling sales of petrol. The officer arranged for a research project to be undertaken by his local college to design and measure the effect of changes in forecourt layout on petrol sales. Recommendations were made and the changes were adopted which resulted in a rise in sales. The market research inquiries have taken a variety of forms. Firms have contacted industrial officers for assistance with a wide range of problems, including help in locating sources of market intelligence, in obtaining specialist local knowledge, and in obtaining expert assistance in undertaking a market research survey.

Elucidating the Problem

It is in the discussions with the company that the industrial liaison officers are able to suggest the use of market research techniques rather than the blind introduction of new products without an adequate knowledge of prevailing and expected market conditions. In discussion the officer can introduce allied topics, such as whether the product is to be promoted in existing or new markets, whether the firm has adequately considered the consumers' view or use of the product, has advice been taken on the design and many other related topics. The officer can usefully suggest to these companies that before contacting a source of further assistance they consider precisely what information they require together with the basic information they will need to collect in order to hold an effective discussion with their advisers.

I cannot emphasize too strongly that the industrial liaison officer does not attempt to carry out a consultancy project himself on the problem. His ability is that he is a top-class generalist, although his early career may have been in a specialist field. Thus in any discussion an officer would not attempt to study the problem in depth but would question the firm to determine the true nature of the problem. The next action would be to locate the most suitable means available to the company to carry out the project. In the smaller companies there is a considerable reluctance to spend money on projects other than those connected directly with manufacturing. This, of course, applies to market research. Here the industrial liaison officer can suggest a three-pronged approach: firstly, the collection of information on the company products and operation; secondly, a close examination of competitive products, their qualities and deficiencies and, lastly, an examination of the potential sales area, possible selling points and the collation of a listing of buyers' names.

Range of Problems Received at Industrial Liaison Centres

(a) Developing a new product

Industrial liaison officers frequently receive requests for new products for manufacture. Here they can be of assistance in a number of ways. If the firm already has the idea for the product, but is unsure how it can be developed, the officer can arrange a wide range of assistance. For example, on the initial experimentation and design; the development to prototype stage; advice on the most suitable and efficient processing methods; advice on factory layout and use of labour; alternatively, introductions to sub-contract manufacture and assembly facilities; advice on costing; expert comment on the usefulness and comparative quality of the product and advice on packaging methods and design. Should it also be required the officer can also refer the company to assistance in patenting the product. The information sources used might include the engineering and management departments of the college, an industrial research association, one of the government research laboratories or advisory services, a private consultant, a trade association, and an equipment supplier.

(*b*) *Diversification*

Should a firm require a completely new and novel product, the officer would guide the company to organizations with products available for manufacture. However, before tackling a problem of this type an industrial liaison officer can usefully explore the company's attitude to its own products. Firms frequently consider the introduction of new products when the cause of falling sales may well be due to the company policies. An examination and comparison of the company figures for cost and profitability will frequently identify weaknesses in its operation. A suggested contact in this field is the Centre for Interfirm Comparison. Officers can also assist, through their local contacts, in bringing companies together in a co-operative approach to sharing information on costs. This is, of course, the type of activity that is carried out by the local productivity associations of the British Productivity Council, and these associations would be a source of assistance suggested to companies by the industrial liaison officers. Should consultancy be required the officer will obtain the names and addresses of local and national consultants who could assist with a particular problem.

Typical organizations who hold registers of products available for licence are the National Research and Development Corporation and the Product Licensing Index. Occasionally the officers are in contact with firms who have products but are unable to manufacture or market them effectively. Here the ILO can assist through his intimate knowledge of other companies having spare capacity in the area.

(*c*) *Educational requirements*

During the visits made by the officers gaps in the educational needs of local industry can be identified. Due to their unique location, these needs can be easily fed into the colleges at the correct level. At the request of industrial liaison officers a number of tailor-made courses on specific topics have been started throughout the country. Indeed, in some instances, specially designed courses have been produced for on-the-job training at individual firms. An identified demand in the south-west region recently resulted in a one-day symposium being organized by the Ministry of Technology on industrial market research. This was attended by 145 representatives of south-west firms in all size categories.

(*d*) *Translations*

The translation of sales documents into a range of languages is a relatively frequent problem received by the industrial liaison centres. Through their intimate knowledge of local conditions the officers can suggest organizations or individuals who are able to carry out translating rapidly, accurately, and sometimes more cheaply than those made by national organizations.

(e) Statistical information

What sources of information are suggested by industrial liaison officers in discussing market research? Firstly, the officers can suggest a survey of trade journals, and here the officers can obtain expert advice on those considered most appropriate to the product under consideration. Too few firms realize the valuable comments that can be obtained from the editorial staff of the trade journals. If the company does not take these journals the officer will locate the nearest holding library and will arrange the necessary introductions.

With regard to statistics, the officer can advise the company on the most probable sources of information. These may range from a trade association to a private research organization, from a government department to a national research laboratory, from a research association to a local library. Particular mention should be made here to the work and publications of the Business Statistical Office of the Board of Trade. Although firms are involved in supplying information for the census of production, many do not realize the valuable information they can obtain in return. Companies are also frequently unaware of the excellent facilities available at the Board of Trade Statistics and Market Intelligence Library at Hillgate House.

The officer can equally advise when information on particular companies is required. This may include the use of *Kompass Register, Dun and Bradstreet, Directory of Directors*, the *Stock Exchange Year Book, Rylands* and *Kellys Directories*. The information required may necessitate a search being carried out at the Board of Trade's Public Search Department. Here the industrial liaison officer assists the company by giving advice as to how to contact the organization and indicating the probable cost involvement. Some of these points may be regarded as normal method of approaching the problem by a larger company, but it should be remembered that the managerial staff in the smaller firm have far wider ranging duties with little opportunity for delegation. In this atmosphere it is difficult for any individual to become experienced in knowing the various sources of help that are now available.

(f) Market research projects

Should a more extensive project be needed the industrial liaison officer will suggest to companies the names of suitable organizations in this field. This could be through organizations holding such records, for example Market Research Society and the British Institute of Management. A number of colleges are well equipped to carry out this work and indeed may welcome such inquiries for student projects.

(g) Exporting

Turning to exports, here there are a number of organizations offering their assistance, of which probably the best advertised is the Board of Trade Export Services Branch. Other sources of help are the clearing banks, the National

Institute of Export, the British National Export Council and certain of the Chambers of Commerce.

Concluding Remarks

In this lecture I have indicated the range of services being used by industrial liaison officers. If you have a problem, and are in the smaller company size range, I would suggest you to contact your local centre. Through discussion the officer will then be best able to suggest and arrange for the most appropriate assistance for particular needs.

COLLECTION AND UTILIZATION OF ECONOMIC INFORMATION—SOME OF ITS PROBLEMS

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Chemical Group/ECMRA Conference on Commercial Intelligence, Tuesday 12th November 1968

IT is very fashionable today to talk about information and documentation and their tremendous growth. Much has been said and done about scientific and technical information. However, until recently, economic information has been more or less treated as a poor relation. The fact that a conference, such as this one and also a subsequent seminar to be held in April, by request of members of the Aslib Chemical Group, is a very encouraging sign that the situation is now undergoing change.

However, many obstacles have still to be overcome. It is still common practice in many European companies to consider economic information as a highly sensitive area. Of course one must make a distinction between data commonly available in publications and data being company property. But this same difference exists in scientific research and information pertaining to it. It is encouraging to notice a change in attitude; more information is being published and sources of this information are becoming better known throughout industry.

Being an information man I intend to emphasize this side of the problem. I shall try to define what information is and to explain very briefly why it is an integrated part of an efficient market research function, how an information service covering Europe is operating and what its major problems are.

Trying to define the concepts of information and documentation can be dangerous and lead to a Byzantine discussion about the sex of the angels. Nevertheless, I'll try.

Documentation is, in my opinion, stored knowledge with a dynamic input and a static output, whereas I would call *information* a flow of thoughts based on raw material that must be treated, upgraded or, in one word, managed.

What now is this raw material? I should like to call it all those data, facts, concepts in whatever shape which enable the market analyst to find answers to the following questions:

What are and what is the size of past, present and future markets?

What is the competitive position of these markets?

What is the political, economic and social environment?

What is the price situation—how is this influenced by tariffs and duties (evolution of blocks like EEC, EFTA, etc. . . .)?

This indicates that the effectiveness of any market research effort will be directly related to the effectiveness of the information system available. The very specialized nature of this information justifies, in my opinion, a separate, tailor-made information system with permanent and immediate access.

I should now like to describe how we operate in my company. Esso Chemical SA, a wholly owned affiliate of Esso Chemical Inc., in New York, has the responsibility of co-ordinating the chemical activities in Europe. The offices are located in Brussels, with affiliated companies in all major European countries. One of these responsibilities is planning, of which market research is an obvious part. Our information centre needs to cover a wide area. We do, of course, rely on our counterparts in the affiliates for specific information pertinent to their country.

Data are collected by our information centre on the following subjects:

Products: 1 all products Esso Chemical is currently producing, together with derivatives;

2 all competitive material;

3 new products which may become of interest.

This includes:

data on raw materials, processes, end-use patterns (conversion factors);

statistical information such as production, consumption, import/export and capacities;

cost and prices linked with the very important problem of the evolution of tariffs are also covered.

Whenever possible this is done for the whole of Europe. We also keep general information on the USA, Canada and Japan for reference.

The environment

The economic and political climate is a very important factor. General information is therefore kept on all European countries. This includes data on the environmental outlook, main economic growth indicators, the structure of and other data on industry and trade, official notifications on foreign trade, etc.

Industries

Because of the increasing amount of chemicals entering different branches of industry it is worthwhile and even necessary to gather data on the packaging, automotive, building and other industries.

Companies

Of extreme importance is a complete collection and interpretation of all published data on the industry and on competitors' activities which relate to that industry. We therefore have an extensive collection of annual reports, trade brochures, articles appearing in the Press, statements made by presidents, etc.

Where do we find answers to questions asked on subjects previously mentioned?

Sources Used

Official Statistics: a complete set of statistics published by the European countries is used for reference. This comprises yearbooks, industrial production and, when available, consumption figures, foreign trade statistics, national accounts, demography and salary data. Sets of publications by the major inter- or supranational organizations, such as UN, OECD, EEC, FAO, WHO, etc., are used in order to compare figures from different countries.

Periodicals: a consistent monitoring of some of the key periodicals is the major source of information. I would like to mention here periodicals such as *European Chemical News, Chemical Age, Chemische Industrie* (excellent indexes) and *Oil, Paint and Drug Reporter* for the situation in the USA. This list is not exhaustive. Some more basic reference material will be mentioned in the course of my exposé.

Secondary periodicals: these abstracting periodicals are very useful. Especially when they have a good index. I would like to pay tribute to *Search.* This service publishes every month abstracts on various subjects in the chemical and related sector. One can subscribe to only those which are of interest. Outstanding is the monthly cumulative index. *Chemical Horizons* is a weekly abstracting service. It is useful for people who do not have time to read periodicals. Production and consumption data put in tabular form for some key chemicals in the EEC are given by SERDIC's service called *Chemeurop.* Among the excellent reports published by the Stanford Research Institute I would like to mention the *Chemical Economics Handbook* in twelve volumes. Though very much centred on the USA, it gives invaluable information on costs, processes, etc. Its only drawback is the price. A first corporate subscription amounts to $4,000. Annual fee for replacement sheets amounts to $750.

Internal Information

A very important source are the sales divisions. The problem is how to obtain pertinent information.

Recently a questionnaire was sent out to market researchers in the chemical industry. To the question: How much inside information is passed on to the market research information centre?—70 per cent of the answers indicated that less than 60 per cent of the existing information was received. Do you not think this is alarming?

The best way to overcome this problem is to have frequent contacts with the sales people.

This brief enumeration of sources of information leads us to describe how they are discovered, stored and put in a workable form. The collection of statistical reference works is kept as such. Information in periodicals is gathered in the following way: certain important periodicals are monitored by our market research and information centre staff. Articles marked for filing go to the information centre, where they are clipped, indexed and stored. This indexing differs from the word-level indexing done by library staff in this way: it is based on the concept of the material being reviewed. After thoroughly absorbing the contents of the document the concepts with which it is concerned are identified.

These concepts or key words are based on a *Thesaurus,* which was developed in order to suit our specific needs. I do not intend to describe in depth how a co-ordinate indexing system works, as I presume that you are familiar with all kind of systems used in information retrieval. Let me just briefly state that all incoming documents are filed in chronological order. Cross-referencing is done by means of peek-a-boo cards, each card representing one key concept. Retrieval is done by superimposing those cards representing key concepts relevent to the question asked. A set of numbers locates the documents that result from this search.

The only duplicating done is for company information. Our *company files* are kept in alphabetical order and contain all financial as well as other information on competitive companies. If one wishes to study a company it is advisable to have all information chronologically available in one spot. This method allows one to follow the way of thinking in a company. General information of a macroeconomic nature is kept in a general *country files* section.

Having described in broad lines how Esso Chemical SA handle their economic information, I would like to draw some conclusions.

The major problem, as usual, in information work is where to locate the possible source. I want to mention here the excellent books published by CBD Research Ltd: one on European companies, *A guide to sources of information*; another, by Miss Joan Harvey, *Statistics Europe, sources for market research.*

But, above all, I would like to stress the importance of personal contacts. International organizations such as the EEC, the OECD and others are very happy to talk to people from industry and I would like to pay tribute here to the great help we obtain from the OECD Chemical Products Committee, which bring out the yearly survey on the chemical industry.

Ladies and gentlemen, one can always find an answer to one's queries, but it will often take considerable time and effort. Therefore, I make a plea for closer co-operation among people sharing the same problems, people like us, who by our presence here prove that we are willing to do so.

LIST OF SOME REFERENCES

1 *Search.* Compendium Publishers International Corp., 2175 Lemoine Avenue, Fort Lee, N.J. 07024. Nineteen separate publications Subscription price varying from \$20–\$50 a year. Among which: Chemicals, Inorganic and Organic, Marketing and Statistics; Fertilizers; Pesticides, Plastics and Resins; Rubber and Textiles.

2 *Chemical Horizons.* 274 Madison Avenue, New York, N.Y. 10016. Yearly subscription \$125.

3 *Chemeurop, Serdic.* 12 Chaussée d'Antin, 75 Paris 2. Supply-demand balance for 112 chemicals in the EEC in loose-leaf binder. First year FF 7,000. Subsequent years FF 6,000.

4 *Chemical Economics Handbook.* Stanford Research Institute, Menlo Park, California 94025. Twelve volumes. First corporate subscription \$4,000. Annual fee for replacement sheets \$750.

5 *Process Economics Program.* Stanford Research Institute. Series of comprehensive studies on chemical products. (\$10.)

6 *Statistics Europe.* Sources for Market Research, by J. M. Harvey, 1968, xii, (170) p. CBD Research Ltd, 114 High Street, Beckenham, Kent.

7 *European Companies.* A Guide to Sources of Information, compiled by G. P. Henderson, 1966, xii, (168) p. CBD Research Ltd.

8 *Chemical Industry.* OECD, Paris. Yearly publication. Last edition 1968, giving data on 1966–7.

INFORMATION IN MARKET RESEARCH

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Chemical Group/ECMRA Conference on Commercial Intelligence,
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Introduction

WITH the time available to me today I am forced to be selective, and I propose to interpret my title as applying strictly to market research on the products of the chemical industry.

As these include both producers' goods (i.e. ones sold to factories) and products sold to the general public, both industrial and consumer market research are involved. These differ in nature and techniques, and as the former is the more interesting from the point of view of information requirements I will concentrate on that.

I understand that many of you are experienced information officers and, as papers on information for market research have been inevitable inclusions in market research courses and conferences for years, I propose to talk to you primarily about the conduct of a market research job. You will readily be able to discern the information needs at the various stages and where to go for the information.

Techniques of Industrial Market Research

The nature of a particular job will, of course, vary somewhat with the decision to be aided. Work to aid research and investment decisions will be most concerned with establishing future medium- to-long term market growth, price trends, competitors' plans and any factors in the market that have a bearing on risk. Work to aid marketing decisions will be much concerned with mapping the current- to medium-term market in more detail and may be much concerned with the optimum product profile and trends therein. Work to discern new product opportunities will be more concerned with establishing needs and optimum performance/price characteristics. But all of them are likely to involve the method called 'end-use analysis', in which one establishes the actual/potential end-uses and explores them by field work. Depending on the nature of the work one may also attempt, usually as a supplementary aid, some statistical or econometric method of forecasting the size of future demand. Those of you who have to provide information for use in these three types of exercise may be interested in seeing how they complement one another and the state of the art on each, which was reviewed in the *IMRA Journal* last November.

End-Use Analysis

Of the techniques, end-use analysis is currently the most frequently used and throws up the widest range of interesting requirements for information.

These can best be illustrated by an example. Suppose the market research worker is to determine the UK five- to ten-year forward demand for a well-known polymer on which he has not worked before—a by no means uncommon situation. The products into which it goes and from which its demand derives are many, field work is costly and he has to report in four months' time. He cannot possibly explore all the uses exhaustively and the key to success is to deploy his four months to the best advantage—in fact his three months, since the last month will be taken up with collating, last-minute check-ups and reporting. Clearly he must concentrate on the big current and future uses, that will account for most of total future demand, and get the best possible estimate on those. By this means he will minimize the risk of serious error in his total demand estimate. First then he needs information to enable him to structure the survey and allocate his time.

What are the uses, what is the current total market size, what proportion does each use account for, what are their differential growth rates, what are the important potential future uses—to which uses must he devote his limited time? Once this is known the second question is the structure of each relevant sector: how many processors of the polymer are there in each sector and how is the business split between them in each sector? From this one can start to draft out a plan of campaign, since the total visiting possible is determined by the time available and the optimum allocation of visits to sectors begins to emerge.

Now the researcher has to equip himself to survey in each of these sectors. To do this he has to understand what factors determine the demand for the product in each, and particularly what factors determine whether his material becomes more or less widely used in that sector's products. Like a barrister on a complicated new patent suit he needs a good brief before he can contemplate discussing these matters on an informed basis with others. Efficiency in this stage of the survey is crucial to the quality of its subsequent conduct, and a well-organized market research department will spare no pains or expense to ensure that the essential information can be provided and digested in the short time available for digestion. One of the universal natural laws that operates extremely strongly in market research is 'To him that hath, shall be given', and a well-organized market research worker will usually read up not only the properties of his material but the techno-commercial background on the use of his material in each sector, with particular reference to inter-material competition, to equip himself to pick the brains of his own company's technical staff who are expert in these matters.

Only then will he start visiting outside the company, realizing that if he goes out knowing nothing he will come back with lots of facts that he has been unable to appraise as they were presented to him, and equivalent in substance to the contents of an elementary text book. If he goes out informed he is equipped not to seek facts primarily but rather facts plus understanding. The latter is the vital ingredient for good estimating in industries where past trends can be upset by technological changes that affect either the user industry technology or the inter-material competition. He can ask more perceptive questions, and he has a template of co-ordinated knowledge engraved in the forefront of his brain against which he can appraise facts as they are presented to him and raise supplementary queries if they don't fit.

It is at this stage above all that the quality of the information officer is revealed, in his or her ability to have available in advance not references for sifting but photocopies of the best review articles covering the uses of the materials and the relevant technological factors. Here of course a wide acquaintance with applied science literature is essential. Plastics enter into the composition of the products of most industries, and where this is not possible they are usually involved in their packaging! The information officer should literally know for the whole range of industries which have bodies publishing periodic reviews of their industry's technology, which have annual/biennial reviews of recent advances and recent literature, which have annual conference proceedings in which excellent reviews appear, which are served by specialist libraries, what the best magazines for each industry are, etc. She should in advance of the job have found on her own initiative the best papers for educating the researcher in the relevant aspects of each sector, and the staffing of the market research department should be such as to make this practicable.

I am aware that to a one-man market research department this must sound like moonshine—believe me, in the really effective high-quality market research departments this sort of information foundation is essential—and I speak from twenty years' association with market research and experience of creating one of the best teams in the industry.

Besides this will be needed anything helpful to the quantitative assessment of demand, and particularly statistics. Statistics for the output of products consuming the material, statistics for past UK consumptions and net exports of the material being surveyed, price statistics, etc. All these will be wanted for as many years as possible, for always one is looking for trends. Any useful background material that provides understanding of observed movements will be warmly welcomed. Scratch a statistic and you will find an error; it is a jewel of an information officer who can identify what the statistics actually are as opposed to what they are described as being and a jewel indeed who can identify people who are knowledgeable about them and who can point out the inevitable pitfalls waiting for the feet of the uninformed.

The Developing Needs

So much for present requirements, what of future trends? I would refer to three things:

(*i*) The computer is going to become all pervasive in company life. It will place a great strain on market research because one can generate all the internal company statistics one wants but not all the data on the world outside needed for pairing with them in econometric exercises. It will be necessary for market research workers/information officers to take much greater interest in getting the Government to produce more statistics *tailor made for business purposes.*

(*ii*) The literature on techniques is increasing—attention needs to be given to its indexing and retrieval.

(*iii*) More chemical surveys are becoming international. Somehow, in foreign work, time is always extra short, so that first-class information on industry structures, etc., becomes even more essential.

CURRENT TRENDS IN GOVERNMENT STATISTICS FOR THE CHEMICAL INDUSTRY

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THE title for this paper was selected advisedly, for it will serve to correct a popular misconception about the part the Chemical Industries Association plays in the collection and dissemination of statistics about the chemical industry.

Let me say at once that the greater part of the data and statistics sent out by CIA are either extracted from, or based on statistical series published by the Government. Certainly the series in our annual reports and all the trade and production figures we assemble for the benefit of our members are taken from official statistics.

I might point out here that our information service, which is expanding, is available to our members and we do try to solve their problems. As will be seen this may involve considerable research, even though the question may appear to be simple to answer. Although the service is not available to non-members, we do, of course, try to help them if the answer is fairly readily to hand or if it is likely to promote members' interest, but we cannot undertake time-consuming tasks for them.

The economic and statistical work of the CIA does not, of course, consist simply of extracting figures from Government publications and regurgitating them to our members. Our Economics and Statistics Committee, whose members are drawn from various sectors of the industry, meets regularly to consider the state of the economy of the chemical industry in the UK and, in the light of available statistics, to advise the Economic Development Policy Committee on short-term and long-term trends. This function, desirable and necessary as it is for the Association, takes on a far greater importance when we consider the ever increasing Government interest and participation in the industry's affairs. The Association, both directly and through representation on bodies such as the Economic Development Committee for the Chemical Industry (The Chemical 'Neddy'), is in dialogue with the Government on practically every aspect of the management of the industry. It is vital, therefore, that we should be *au fait* with the statistics which the Government uses to measure the scope and performance of the industry. It is similarly essential that we are aware of the Government's thinking on the future development of those statistics, while at the same time considering their adequacy from our own point of view, if this differs from theirs.

The Government for similar reasons is also aware of the necessity for co-operation between its statisticians and those of industry and various publications are aimed at projecting its forward thinking, *Economic Trends* is an example of this on the actual statistical side dealing with the assessment, month by month, of the whole economic field and showing the short-term forward trends. The latest publication by the Central Statistical Office, *Statistical News,* is an attempt to let the public in on the changes and revisions of statistical series, and of methods of collecting statistics which are being planned at this moment.

As *Statistical News* is a very general publication which gives no more than a broad outline of the CSO's future programme it is as well that, in the chemical industry at any rate, it is not our only source of information about the future shape of statistics. It was mentioned just now that the Government itself is anxious to have industry's co-operation in this matter. To this end the Board of Trade set up, in March 1966, the Working Party on Chemical Statistics, whose direct aim is to improve chemical statistics—with a strong team from CIA and, when desirable, from specialized parts of the industry, e.g. plastics. This Working Party has been meeting at relatively frequent intervals since that date, and it is not extravagant to claim that its deliberations are likely to have a profound effect on the shape of chemical statistics, both in the near future and in the long term.

This paper is an attempt at summarizing the most important issues discussed in the Working Party and, where possible, the conclusions reached.

Before going on to future ideas on chemical statistics it is considered useful to spend some little time on those we have with us at the present time and indeed to list some general considerations which affect the type of statistical classification adopted for distinguishing any given economic activity. For this purpose I shall unashamedly plagiarize some notes made some time ago by my colleague Mr N. E. Wallace, who not only is a member of the Working Party but is also the secretary of CIA's Economic Development Policy Committee, of its Economics and Statistics Committee and is the Association's official spokesman on statistical matters.

BACKGROUND TO PRESENT STATISTICAL SERIES

I. Industrial Classification

A. General Considerations affecting the Type of Classification Adopted

(1) *Major Divisions*

Amongst the major economic activities which require to be separately distinguished are the industrial, agricultural and the services sectors. In the first a distinction has to be made between extractive industries (e.g. coal mining) and manufacturing industries, and the last should distinguish between publicly and privately provided services, including professional work.

(2) *Principles of Classification*

A classification of economic activities has to take account of the type of organization involved in these activities. Some are vertically integrated, others horizontally integrated, and others undertake a number of unrelated activities, so that varied criteria for classification must be adopted to suit the variations in circumstances.

Amongst the criteria which may be applied are:

(*i*) Classification by raw material, e.g. rubber industry;
(*ii*) Classification according to the use of the product, e.g. toys, dyestuffs;
(*iii*) Classification according to the method of production, e.g. foundries.

In addition, it is necessary to consider the unit which provides the statistics. In the first place an industrial classification must consider enterprises, i.e. separate legal entities, because it is they who control the productive and other activities of their parts. However, it will commonly be necessary to go further and consider establishments, i.e. individual works or divisions of enterprises.

(3) *Classification by Principal Activity*

Even a single establishment, however, may carry on activities in more than one sector of industrial activity, and to cope with this situation it is necessary in the first place to allocate returns according to the principal activity carried on.

Opposing factors can then be recognized which means that the final classification must be a compromise. For example, the greater the sub-division into sectors, the fewer enterprises or even establishments devote themselves exclusively to one sector only. As a corollary, the greater the sub-division into sectors, the more the statistics based on the principal activity of the establishment are likely to be influenced by factors relating to activities in other sectors.

Some data are relatively easily broken down within an organization even when it embraces several sectors, e.g. manpower, but difficulties occur when purchases, consumption, stocks and sales have to be allocated to different aspects of the activity of the single enterprise or establishment. If the organization is vertical, difficulties arise in transfer values, or if the organization is horizontal, the problems arise in the allocation of raw material consumption amongst the different sectors.

(4) *Treatment of Activities which commonly are Integrated*

Two methods may be employed to minimize the disadvantages of classification by the principal activity:

(*i*) The sector boundaries may be drawn so that the activities of the statistical units fall substantially within one sector. For example, there may be no separate sector for spinning of wool if the major part of the woollen fibres are produced by establishments which also turn the fibres into cloth. The sector would therefore cover 'spinning and weaving of wool'.
(*ii*) Alternatively, the classification may contain special sectors covering the activities most frequently carried out together in one establishment and in addition have a separate sector for establishments carrying out only the separate parts of those combined processes, e.g. there would be sectors not only for spinning of wool and weaving of wool but also for spinning and weaving combined. This system separates the integrated from the non-integrated establishments.

Considerable difficulties arise in the treatment of activities of a kind frequently integrated. In theory, the decision whether the type of activity can be considered homogenous or not is only possible if one has exceedingly detailed production statistics. As these statistics may, however, be lacking, it is sometimes necessary to make decisions on the basis of the qualitative judgement of experts rather than on quantitative information from past statistics.

These considerations lead in general to the conclusion that despite the fundamental difference between classification of products and classification of activities it is extremely important to use both bases in developing industrial statistics. Only in this way is it possible to obtain a clear view of the structural relations in industry and to know the importance of the secondary activities carried on in the different sectors and the division of the manufacturing of different products amongst these sectors.

B. *International Standard Industrial Classification (ISIC), Standard Industrial Classification (SIC), and Nomenclature des Industries Etablies dans les Communautes Europeennes (NICE)*

Although this paper is about United Kingdom statistics it is impossible to discuss UK statistics in isolation, as both in the matter of industrial statistics and in the allied field of trade statistics there is a great deal of international interdependence. It is obviously desirable that nations which enjoy mutual trade should use the same systems of classification. In the industrial field this would make it easier to compare corresponding sectors of one nation's economy with those of another. In considering trade, one country's exports or imports of the same group of commodities could be more readily compared with those of another and the flow of trade between countries monitored with greater facility.

While, unfortunately, this identity of classifications remains an ideal there has been a fair amount of international co-operation which has resulted in the International Standard Industrial Classification and in the Standard International Trade Classification. Both of these form the basis of the classifications of a number of countries including the United Kingdom. The trade classifications will be considered later. Right now a closer look at the industrial classifications would be valuable. We shall deal only with the section on the chemical industry.

1. *ISIC*

ISIC is the International Standard Industrial Classification of the United Nations. It is an early attempt at standardization and, because it was devised to be used by a large number of countries, has only a small number of subdivisions. Both our own SIC (Standard Industrial Classification) and the EEC's NICE were derived from ISIC mainly by further subdivision and sector breakdown, although some modifications of actual classification were made in each case.

Thus for the Chemical Industry ISIC has only four subdivisions which cover:

Basic Individual Chemicals,
Oils and Fats,
Paints,
Miscellaneous products (e.g. pharmaceuticals, soaps, insecticides, etc.)

and there is no further sector breakdown.

2. *NICE*

NICE has three main subdivisions:

Group 311 Manufacture of basic chemicals and their manufacture followed by any further degree of processing.

Group 312	Specialized manufacture of chemical products mainly for industrial and agricultural use.
Group 313	Specialized manufacture of chemical products mainly for domestic and personal uses.

Groups 312 and 313 are further broken down into nine and twelve sub-groups or sectors respectively, but group 311 is not, even though it takes in not only establishments making basic chemicals but also integrated establishments proceeding through to end-products.

3. *SIC*

Our own SIC has seven main sub divisions:

MLH 271	Chemicals and Dyes
MLH 272	Pharmaceuticals and Toilet Preparations
MLH 273	Explosives and Fireworks
MLH 274	Paint and Printing Ink
MLH 275	Vegetable and Animal Oils, Fats, Soaps and Detergents
MLH 276	Synthetic Resins and Plastics Materials
MLH 277	Polishes, Gelatine, Adhesives, etc.

Of these 'Minimum List Headings', MLH 271 is further broken down into three sub-groups or sectors:

271.1	Dyestuffs
271.2	Fertilizers and Chemicals for pest control
271.3	Other Chemicals

MLH 272 is broken down into two sub-groups:

272.1	Pharmaceutical Preparations
272.2	Toilet Preparations

MLH 275 is broken down into two sub-groups:

275.1	Vegetable and Animal Oils and Fats
275.2	Soaps, Detergents, Candles and Glycerine

Finally, MLH 277 is broken down into two sub-groups:

2771.1	Polishes
277.2	Gelatine, Adhesives, etc.

SIC therefore has a total of twelve sub-groups or sectors, including those Minimum List Headings which are not further broken down.

This compares with a total of twenty-two for NICE and of four for ISIC. On this count alone it becomes apparent that there is room for considerable international work on the harmonization of industrial classifications. The whole issue becomes more complex when the trade classifications are considered.

II. Trade Classifications

A. General Considerations

Statistical classifications tend to become slaves to the statistics immediately available for any given purpose or at any rate to those which are not unduly difficult to collect. Thus when we are thinking in terms of industrial production it is much easier to think in terms of industries, sectors, enterprises and establishments because this is the route by which statistics are most readily gathered. There is a good chance of getting an accurate return from an establishment operating largely or wholly in one sector of industry if all that is asked for is a return of their total production falling within that sector. The same, as was said earlier, can be said for some of the other industrial statistics, such as manpower and use of fuel, energy, etc. The chances of a good return become much reduced, however, when the demand is for a great deal of detailed statistical information on individual products.

These are some of the influences, then, which have played their part in the building of the industrial classifications we have discussed.

The story becomes rather different when international trade is considered. Here, both for Customs purposes and for reasons of economic monitoring, it becomes necessary to have a measure of the flow of goods across national frontiers. It is immediately obvious that this sort of measurement can best be undertaken at some central point along the route taken by the commodities as they travel from the point of production to their destination in the other country. Ideally, this point would be the frontier or nearest point to it. This is neither necessary nor practical these days, of course, as all packages and consignments being exported from one country to another are accompanied by documents which serve to inform the authorities of the exporting country what is leaving the country, and those of the importing country what is arriving. On the basis of these documents any Customs duties can be levied and all statistical returns made.

Here, then, we see at once that it becomes quite impracticable to classify all goods in terms of the sector of industry containing the factory which produces or, in the case of imports, uses them. Duties are levied on specific products and the authorities are primarily interested in an exact description of the quantity and value of the particular commodity being exported or imported. Knowledge of the sector or even of the industry which produces or uses the goods is of secondary, if indeed any, interest.

Without exception, therefore, the trade classifications have their divisions and subdivisions grouped in accordance with commodity descriptions. It will readily be seen that this makes it difficult to assess what contribution external trade makes to any industry which is classified by an industrial classification, although with some manufactured items classification by commodity is in fair harmony with classification by sector producing the commodity. Thus there is no particular difficulty in reconciling imports or exports of, say, Engineers Castings with MLH 313 of the SIC, entitled 'Iron Castings, etc.', or in reconciling exports of Scottish whisky with 239.1, 'Spirit distilling and compounding', or imports of motor vehicles with 381, 'Motor vehicle manufacturing'. With chemicals, however, the situation is quite different. Chemicals are used extensively by every other manufacturing industry, as well as by the chemical industry itself. To take a typical example, in 1967 we did not produce sufficient ammonia in the UK for our own needs and therefore imported liquid ammonia to supplement our own production. We could allot these imports of ammonia to any sector from 271 through to 277 within the chemical industry. All use quantities of ammonia. Or we could allot them to MLH 411, 'Production of man-made fibres', where quantities of ammonia are used in the regeneration of cellulose, or to parts of the leather industry, or the furniture-making industry, or for that matter, to any of the industries, including agriculture, using ammonia in any part of their process. Similar considerations apply to exports of chemicals, although to a lesser extent. In this case at least we are fairly sure that the exports of any given chemical may be allotted to one or more sectors within the industry and not, in general, to another industry. The choice of sector is just as difficult, however, because of the high degree of integration in the industry and because many chemicals could just as easily be produced by plants operating in one of a number of sectors.

B. Brussels Tariff Nomenclature (BTN) *Revised Standard International Trade Classification (SITC Revised), United Kingdom Trade Classifications*

1. Brussels Tariff Nomenclature (BTN)

In December 1950 the Customs Co-operation Council was set up as the direct result of a three-year study by the European Customs Union on methods of co-operation in Customs practice and technique.

The purposes of the Council were to study all aspects of co-operation in customs matters, both technical and economic, with a view to attaining harmony and uniformity. It meets at least twice annually and has four subordinate committees: Permanent Technical, Valuation, Nomenclature and Finance.

The main function of the Nomenclature Committee was to establish a uniform classification for customs purposes of goods traded between countries. The 1955 Brussels Nomenclature, with certain revisions made in 1959 and subsequently, is now well known, of course, and is being used and applied almost universally, In it articles are grouped mainly according to the nature of the material from which they are made, as has been traditional in customs classifications.

2. Standard International Trade Classification, Revised

SITC (revised) has a parallel development to that of BTN, but the work towards SITC began earlier. The original SITC was drawn up in 1950 in co-operation with governments and with the assistance of expert consultants of the United Nations Secretariat. (It was developed from a much earlier document published by the League of Nations in 1938, 'The Minimum List of Commodities for International Trade Statistics', which itself was based upon the League's 1937 revised 'Draft Customs Nomenclature'.)

The adoption of the 1950 SITC was urged upon all governments by the United Nations with considerable success; so much so that by 1960 the governments of countries accounting for about 80 per cent of world trade were compiling trade-by-commodity data according to it.

Thus during the late 1950s the situation had changed from there not being any agreed international nomenclature or trade classification to a state where, in an embarrassment of riches, we had two commodity classifications.

In order to rationalize this state of affairs a group of experts from countries and inter-governmental agencies, using both SITC and BTN, prepared a proposal, the SITC (revised), for combining the original SITC and the BTN. This proposal required some modification of both classifications. BTN had to have a number of items subdivided and a commentary on the new subheadings provided to the Brussels Explanatory Notes. The original SITC was revised to take into account structural changes in external trade since 1950, although retaining its basic group structure. Some subdivision to take care of certain BTN items also took place. The result, which was accepted and recommended by both the Customs Co-operation Council and the Statistical Commission of the United Nations, was that, by changing to SITC (revised) and to the modified BTN, a one-to-one correspondence had been achieved between the two classifications.

In other words, the headings of individual items in the two classifications were identical, although their grouping differed—the SITC (revised) being grouped in terms of classes of goods (food, raw materials, etc.) and in terms of commodities by stage of fabrication and by industrial origin, while in the BTN goods remained grouped in terms of the nature of the material from which they were made. This difference in grouping made trade and economic analysis easier if SITC (revised) were used, while assessment for tariff purposes was facilitated by the use of BTN.

3. *UK Trade Classifications*

It now becomes plain why we have two basic methods of classifying external trade in the UK. The UK tariff classification, used for assessing import duties on goods entering the country, is directly based on BTN. The 'Statistical Classification for imported goods and for re-exported goods' and the 'Export List', on the other hand, are based on SITC (revised) and used for trade and economic analyses by the Board of Trade. This, then, is also the reason why invoices have, at present, to bear both numbers, the tariff number for Customs and Excise use and the statistical number for trade analysis.

RECENT CHANGES ACHIEVED

We have considered the development of the statistical classifications in some detail because they are the ground from which all statistical series spring. No comparison or interpretation of data is possible unless the classification, according to which the data are grouped and defined, is known and understood. It follows that, if there are defects in the classification, these carry through to the data and its interpretation and comparison. Further, if two or more different classifications are being used as a basis for the statistical treatment of data from one industry, it becomes increasingly difficult to make any valid assessment of the economic progress of that industry. The problem becomes even more complex when we attempt to compare the economic achievements of different industries in the same country or of the same industry in different countries.

These general considerations, then, have been the spur to improved statistics, both nationally and internationally. Nationally, however, an even stronger impetus to change has been Government's increasing dependence on economic planning. In order to plan effectively, it is vital that the planners be in possession of accurate data on past performance and of reasoned and reasonable forecasts of future performance. It is this need which led to the formation of the National Economic Development Office and of its separate Economic Development Committees for the various industries.

The dialogue in the development committees, the 'little Neddies', between industry and Government, is in great measure responsible for the signs of progress in the world of statistics and it may certainly be said that the Economic Development Committee for the Chemical Industry was a prime mover in this direction. It pressed for better Government statistics in order that better forecasting could take place; pressure which was made articulate in a paper tabled by the Chemical Industries Association in March 1966, which contained an analysis of the situation and a list of recommended changes in official statistics, particularly with respect to industrial and trade statistics.

The main substance of these recommendations was to introduce consistency into the definition, coverage and sector breakdown of each of the main statistical series, so that it would be possible to relate items such as output, numbers employed and investment to each other, and to establish their trends in order to base forecasts and estimates upon them. If once this consistent basis were firmly established, it could be developed with appropriate detail in future years to keep in step with the growing ability of firms to produce more refined statistics using computer methods, and with the growing ability of Government and others to use such information in building more detailed models of the economy. As it was the full census of production which would provide the foundations for future sector analysis, it was important that the changes suggested should be carried through in time to be incorporated in the design of the 1968 census.

This paper, the result of some six month's work by the statistical panel of, at the beginning, ABCM and, later, CIA, turned out to be of far-reaching importance in the course of events. It is attached as Appendix I and resulted in the formation of the Board of Trade's statistical working party, providing that working party with the underlying principles of many of its terms of reference.

In the eighteen months or so of its existence the BOT statistical working party's deliberations in committee and its stimulation of collaborative work between Board of Trade and CIA officials on matters of detail has already resulted in an improved census form for the 1968 census. More important, as a corollary to the work on the census, the Standard Industrial Classification has been revised and the new section dealing with the chemical industry contains much greater sector detail, while omitting some of the allied industries (mineral oil refining, coke ovens and manufactured fuel, lubricating oils and greases, vegetable and animal oils and fats) in accordance with the recommendations made by CIA in its original paper. The new breakdown will, as a result, permit the production of 'cleaner' sector statistics with less overlap. It will also make industrial statistics, published by the Board of Trade, comparable with those considered under the EDCCI definition of the industry.

Another improvement is in the field of import statistics. Here the chief complaint in the past has been the lack of product detail published, particularly for imports of organic chemicals. The majority of the statistical headings were of the 'omnibus' variety, aggregating many different products of entirely different origins, values and uses. In theory the 'Special List' of products chargeable for duty at 25 per cent or more provided all the necessary detail, but in practice this information was seriously curtailed because any importer was able to request suppression of such information relating to his imports. As a result of the first meeting of the BOT Statistical Working Party, representations to HM Customs and Excise had obtained their agreement to increase the information provided monthly in the Special List by asterisking items where imports in the month exceeded £10,000, but for which precise figures could not be given because of disclosure. This was a help, as was the special exercise whereby Customs and Excise provided, for an aggregate of six months, detailed import figures for a large number of products on the Special List. This was done as a result of a clause in Section 3 of the Finance Act, which gave Customs and Excise the power to disclose, within strictly defined limits, more import information than hitherto. This information was given to the EDCCI, who in turn passed it to CIA with instructions to disclose it only to inquirers likely to be interested in manufacturing any of the imported chemicals in the United Kingdom. This exercise was a one-time effort to further import substitution and is not likely to be repeated unless tangible success can be reported by EDCCI as a result.

A very recent proposal by HM Customs and Excise is most welcome. In a letter sent to the Confederation of British Industries in September of this year Customs and Excise propose to replace the separate Customs Tariff Classification (BTN based) and the Import and Export Lists (SITC, revised, based) by a single BTN based classification. The proposed new arrangement is linked with the decision to install an automatic data processing system at London Airport. Classification will be by eight digits, the first four corresponding to the Brussels tariff number, the remaining four corresponding to the statistical number at present contained in the Import and Export Lists. At long last, therefore, it looks as if we shall be having one single classification for our external trade statistics.

FUTURE PLANS

So much for the recent achievements. They are not far reaching but they are a step in the right direction. What of the future?

Here there is much promise. It is becoming fairly obvious that other industries must have been pressing for improved statistics, for similar reasons and no doubt in the same way, through their trade associations and their economic development committees, as CIA. This can be deduced from the reorganization of the Central Statistical Office and from the general tone of its new publication *Statistical News*, which emphasises both Government's and industry's need for improved information, and the Central Statistical Office's firm intention to move towards the provision of this in full collaboration with industry.

On the industrial side much is in the pipeline. The greatest major innovation, planned by the Board of Trade, is the creation of a common register of business establishments, and other reporting and accounting units such as companies, business units, and enterprises, which can be used for all industrial statistics and which, when established, will enable the results of different inquiries to be related and to form an integrated system of information. The information, which will go to make up this register, will be stored in a computerized form, capable of continuous updating, and will be so comprehensive that it will become possible:

1. To relate information from different inquiries and to bring it together for defined sectors of the economy.
2. To prevent duplication in the collection of information which is sometimes unavoidable when inquiries are not directed to commonly agreed and defined industrial fields.
3. To use the register to provide a frame for storing information, i.e. for the creation of a data bank.

The Department of Employment and Productivity and the Board of Trade are already engaged in the creation of a common register of establishments within manufacturing industry. This will, of course, enable one of the present anomalies, that between employment figures published by the two departments for, allegedly, the same sector of industry, to be eliminated.

The common register will also make it possible to replace the large-scale quinquennial censuses by much simpler annual censuses, supplementing a comprehensive system of quarterly current reporting.

Finally, on the question of external trade, much thought is being given by the Board of Trade to the revision of statistics so that there may be greater congruence between trade and industrial statistics. The proposed combination of the tariff and statistical classifications mentioned earlier is a step in this direction.

I have touched on the main landmarks in the development of our present statistical series and have attempted to indicate some measure of the Chemical Industries Association's involvement in the 'wind of change' blowing through the statistical world of our industry at this moment. We represent our members, but we believe that it is not immodest to assert that our representations exert an influence whose beneficial effect extends far beyond the confines of our membership.

APPENDIX I

ECONOMIC DEVELOPMENT COMMITTEE FOR THE CHEMICAL INDUSTRY

STATISTICS—NOTE BY CIA

1. Introduction

This report results from the work of the Statistical Panel of ABCM, now Chemical Industries Association Ltd. The starting of this work was mentioned at the meeting of the Economic Development Committee for the Chemical Industry on 13th September 1965, at which the formation of an EDCCI statistics working party was discussed. It was CIA's intention, when its studies had reached the present stage, to seek the views of the main specialist associations in the industry. There has not yet been time to do this, but copies of a draft of this report have been sent to a number of associations, and CIA hopes to receive their views in due course.

The several trade associations for the different sectors of the chemical industry collect statistics to a greater or less degree for the purpose of their own work. For statistics of the industry as a whole the industry has always looked to official sources. CIA considers that HMG must continue to be the main source, for the following reasons:

- (*i*) Only HMG has the necessary powers to ensure that all firms submit returns.
- (*ii*) Firms are often reluctant to provide certain types of data except to a Government department for its confidential information.
- (*iii*) Government collection and preparation will provide the best opportunity of achieving consistency and adherence to common national and, where possible, international definitions and thus a reliable basis for:
  - (*a*) comparisons with other industries and countries—to which CIA attaches great importance,
  - (*b*) the introduction of advanced techniques such as input/output analysis.
- (*iv*) Government collection will avoid duplication of work as HMG must in any event collect some statistics for its own purposes; and will also impose a minimum burden on each company in providing the information that is essential for national needs.

In the rest of this report attention has been concentrated on the statistical series at present published by or available from Government departments. CIA's review was particularly directed to the adequacy of official statistics:

- (*a*) For understanding the structure and growth of the industry as a whole and by sectors; assessing its performance and efficiency in relation to the use of resources of materials, man-power and capital; measuring its output for home consumption and export, etc.
- (*b*) As a basis for making forecasts of its future performance and requirements of resources.

CIA recognizes that a satisfactory statistical system must meet the needs of Government, of the industry and of its individual firms, and of other interests. In its review the Association therefore tried to take account of the requirements of planners, economists and commercial men, both outside and inside the industry.

CIA also recognizes that until a revised statistical system can be agreed and brought into operation, the industry may, for planning and forecasting purposes, be obliged to supplement existing statistics by seeking data from member firms, despite the extra effort which this will involve.

2. Summary of Recommended Action

Detailed examination has shown that for the purposes mentioned above there are serious defects in the available official statistics, in coverage, consistency and detail. Many of the defects of coverage and consistency involve questions which can only be settled by departmental decisions. Others require further study within the industry and in collaboration with the Government departments, as do the defects of detail. CIA, however, believes it would be wrong to delay its recommendations on more general matters until all its examination of detail has been completed.

This report therefore outlines the main types of statistics which CIA believes to be necessary, the changes required to produce them and to achieve consistency. CIA hopes that the EDCCI will approve the broad concept of these proposals and will recommend that they should be used as a starting point for discussions between the Government departments concerned and the industry. It would hope that these discussions would result in agreement of objectives and in the formulation of a detailed list of proposals to achieve them quickly. In the course of this the Government departments would naturally take into account not only the needs of the Government and of the industry but also those of other interests, and would consult fully with representatives of those bodies whom they recognized as having a responsibility or a legitimate interest in the subject. The Government departments would no doubt then wish, in association with the industry, to present the specific proposals to the EDCCI in sufficient detail for the committee to reach a final judgement on their adequacy.

CIA proposes, with the help of specialized associations, to form a standing body within the industry to collect together sector views on the various statistical series at regular intervals and put forward suggestions for their revision to the appropriate departments. One of the reasons for the present unsatisfactory state of chemical statistics is that they have not kept pace with the rapid growth of the industry's technology and product range, and there has been no systematic survey of the whole field. For this the industry must take most of the responsibility. CIA hopes the industry's proposed body would take its place in permanent machinery for the regular review and revision of official statistics.

3. The Basic Problems

The first problem in producing and using chemical industry statistics is that those based on the Standard Industrial Classification cover a much wider range of products than are described as 'chemicals' in the import and export statistics. This reflects a similar discrepancy between the International Standard Industrial Classification and the Standard International Trade Classification to which the UK statistical classifications closely conform. Order IV (Chemicals and Allied Industries) of the UK Standard Industrial Classification includes not only 'chemicals' but petroleum refining, coke ovens, manufactured fuels and lubricating oils. Often statistics are not broken down further than Order IV. Even if these allied industries are excluded, what remains, i.e. Minimum List Headings 271–277, which is the field covered by EDCCI, still spans both the 'Chemicals' and 'Animal and Vegetable Oils and Fats' sections of the import and export statistics. Apart from these major discrepancies between the industry and trade classifications, statistics are often produced on yet different sector breakdowns within one or other of these major classifications.

The chemical industry, as defined by Minimum List Headings 271–277 of the

UK Standard Industrial Classification, comprises not only the manufacture of individual chemical substances, but also their conversion into a number of widely different types of final product, e.g. plastics moulding powders, film and sheet, detergents, explosives, fertilizers, paints, pharmaceuticals, pesticides, toilet preparations, etc., and also products based on natural raw materials, such as vegetable oils and fats and tanning extracts. The types of manufacturing and marketing operations which it embraces are so divergent that any average figure has little meaning, and it becomes difficult to make useful statements about the industry which are true without qualification. Thus to describe the industry's structure and characteristics requires a breakdown of the main statistics of output, investment, manpower and foreign trade into sectors.

The industry consumes a substantial proportion of its own output, e.g. in the manufacture of plastics resins from monomers and the formulation of medicines from their active ingredients. The final product sectors vary greatly in growth potential, e.g. for plastics and pharmaceuticals it is high, but for explosives and paints it is low or static. It follows that the rates at which their consumption of other chemical products grows, also differ greatly. In many firms production of one or more types of final product, such as plastics and fertilizers, is closely integrated with the production of the chemical from which the final product is made. Much of the output of these chemicals never goes outside the firms or even outside the factories which produce them. This makes it difficult to disentangle one sector from another and even more difficult to determine how growth in a final product sector affects that in the sectors making the chemicals used in making the final product. Associated with this is the difficulty of avoiding double counting in trying to determine the gross output of a sector or of the whole industry. (See further under Section 4.A 'Output' below.)

Hitherto the only comprehensive breakdown of statistics by sectors has been in the quinquennial Census of Production, and this has not carried the analysis far enough. In addition, the long delays in the publication of Census data have greatly reduced their value; the last main Census data available to industry when making its forecasts in 1965 for the 1970 National Plan was that of 1958.

In the absence of up-to-date and consistent sector data ABCM, in consultation with specialist Associations, was compelled to base the estimates of the industry's rate of growth and requirements of resources in the context of the National Plan on total figures for the whole industry, despite general knowledge that there were major differences between sectors in growth and capital intensity. ABCM, was therefore able to make only an overall forecast, for example, of total fixed capital investment. It could not be sure whether this made full allowance for the requirements of the fast growing sectors as it was unable to say how much investment each particular sector would require.

In preparing estimates for the National Plan, ABCM also tried to amplify official statistics for past years by asking all its members, and some others, for data both on past achievement and future expectations. By this means it was hoped to link information obtained directly from firms with official total figures. Despite a good response to this request, there were large differences between the aggregate of the returns and the official figures, both by sectors and in total. After allowance had been made for these firms which did not supply figures, it could only be concluded that the Census had counted in the industry important establishments and enterprises which ABCM had not assumed to fall within it. Unfortunately, the Board of Trade were unable to disclose to the EDCCI or ABCM the names of the firms, or even the major firms, classified to each sector in the Census, on the ground that it would break the confidentiality of Census information. Thus, the curiously unsatisfactory position exists, first, that individual firms are obliged to complete census forms in great detail, but the material provided is not analysed and published in a way which makes reliable sector analysis possible; second, that there are delays of years before what is analysed is published, and finally, that neither the Committee nor the industry can even then be told which firms have been included in the total figures for each sector. The official figures cannot therefore be efficiently used or amplified.

Of course many of these deficiencies are not peculiar to the chemical statistics but are common to all industries. They are, however, particularly important for the chemical industry because of the multiplicity of its product range and the variety of the sectors which are grouped together under the official definition.

4. The Types of Statistics Required

After a detailed study by its panel of the available statistics and of the basic problems outlined in the preceding paragraphs, CIA makes the proposals discussed below:

A. Output

The CIA considers the following two measures of the output of the industry as a whole, and by selected sectors, to be essential:

Gross Output.
Net Output (or value added)

both at least for every calendar year.

In many industries output can be measured in physical units produced, for example tons of steel, numbers of vehicles, but the aggregate output of chemicals can only be stated in terms of the value of sales. This is turn raises problems of duplication. A substantial part of the industry's output is consumed internally. The train of production may involve several intermediate products and the pattern is not uniform, for example some firms produce both the intermediates and the final product, while others produce only an intermediate. The total output of the industry is therefore difficult to define consistently. This means that while the figure of 'gross output' for the industry given in the census is useful and necessary for many purposes, including comparisons with other industries at home and overseas, it is not a satisfactory measure of output in relation to investment and manpower. A figure of 'Gross output free of duplication', which is intended to show total sales less sales to other firms within the industry, has been officially derived in the past from details obtained at the quinquennial Census, and it would be useful if it could be satisfactorily defined and regularly produced. This too, however, is not satisfactory for comparison with investment and manpower. The only measure which is free of ambiguity for this purpose is 'net output'.

Problems of duplication are even more formidable in separating the outputs of individual sectors, and the CIA considers an annual figure for the net output of each selected sector to be indispensable.

'Gross output' is already available annually from the annual sample census. The inclusion of details of purchases in the sample would also enable net output to be calculated so that both figures would be available yearly. The monthly Index of Production and supplementary half-yearly figures by sectors of the industry would be adequate for intermediate periods, if the sector definitions were revised and amplified.

B. Manpower

Official series of employment statistics are prepared by both the Board of Trade and the Ministry of Labour. There are, however, considerable differences between the two sets of figures; CIA understands that these are being investigated by the Departments concerned. CIA's main concern is to secure statistics of employment that can be directly related to output and investment. The Board of Trade statistics would appear to do this specifically but need modification, e.g. to include all employees not at the production site. The Ministry of Labour statistics provide a wealth of sector, regional and occupational details which in themselves are most valuable. Their value would, however, be greatly enhanced if they were officially reconciled with the Board of Trade series so that they could be more widely used for planning and forecasting purposes. As the CIA review has so far concentrated on economic data, other important Ministry of Labour statistics concerned with manpower have not at this stage been considered.

C. Capital Investment

The quarterly and annual capital expenditure series published by the Board of Trade relate to (*a*) mineral oil refining, (*b*) other chemicals and allied industries, i.e. (*b*) includes coke ovens, manufactured fuel and lubricating oils and greases in addition to the chemical industry. Statistics of capital investment at current prices on the basis of EDCCI definition of the industry are only available at the time of a full census. The Central Statistical Office publishes annual figures at current prices for the two broad sectors mentioned above, with a breakdown into the type of assets, i.e. buildings, plant and machinery; vehicles, ships and aircraft. It would appear therefore that, with appropriate sector changes, official statistics on the flow of investment would meet the industry's needs.

Gross capital stock at 1958 prices is estimated each year by Central Statistical Office for the whole of 'Chemicals and Allied Industries'; this is broken down into 'Buildings' and 'Plant and Machinery'. The measurement of capital stock presents a number of problems but the Association would welcome and be willing to co-operate in further studies designed to refine and extend the work already done in this field by G. Dean and others. As part of such an exercise, further work on fixed asset cost indices is needed.

D. Overseas Trade

The investigation into chemical imports initiated by the EDCCI has emphasized the need for greater detail in selected products, particularly for imports of organic chemicals. The majority of statistical headings are of the 'omnibus' variety, aggregating together many different products of entirely different origins, values and uses. All the necessary detail for products chargeable for duty at 25 per cent or more is, in theory, provided in the Special List which HM Customs produce each month for the industry, and this should be extended selectively to other sectors. The information available is, however, very seriously curtailed because importers may request suppression of information relating to imports they have made. CIA has given a lead by asking all its members to reduce requests for suppression to a minimum, but this does not reach the majority of importers, who are not chemical manufacturers. HM Customs has been asked to release 'suppressed' data for past complete years where this can be done without infringing the confidentiality of suppressed monthly returns or where, with the passage of time, the publication of the figures is not harmful to the importer. Unfortunately, HM Customs have not so far been able to accede to this request, and determined action by Government and industry is needed to remedy the present unsatisfactory position.

As had been explained, the grouping of products in the import and export statistics does not match their grouping in the classification of industries. It is, however, possible to reconcile the two if further products within the import and export classifications are isolated. Total chemical trade figures can then be compared with output, investment and employment data, and it is suggested that officially reconciled figures be published. The possibilities of greater standardization between trade and industry classifications require careful investigation as the differences are major, but the Association appreciates that complete agreement between definitions, one of which is based on products and the other on trades/industries, is not likely to be achieved.

E. Product Statistics

With the rapid growth of technology, the industry's product pattern is constantly developing and changing. The selection of the individual products for which production data should be published requires regular review to keep pace with the changing pattern. The industry's proposed standing body would co-operate with the appropriate departments in such a review.

F. Sector Analysis

This report has already stressed the need to break down the main statistics of output, investment and manpower on a consistent sector basis which takes account of the significant differences between the various parts of the industry.

There are several sectors—identifiable as product groups whose end-products are sold outside the industry—for which it should be possible to provide separate official statistics on a consistent basis. The ideal would be to align these sectors with their corresponding trade association or associations, so that there is an informed body which can provide forecasts etc., in relation to each sector. In practice, some of these product groups are too small to justify separate analysis, and would probably have to be amalgamated in a miscellaneous group. The appropriate blend of the ideal and the practical will need to be the subject of detailed discussions between the Board of Trade, the CIA and the specialist Associations. Possible candidates for sector treatment are:

Dyestuffs
Fertilizers
Pharmaceutical Preparations
Toilet Preparations
Explosives and Fireworks
Paint (? and Printing Ink)
Vegetable and Animal Oils and Fats
Soap and Detergents
Plastic Materials
Polishes
Gelatine and Adhesives

This leaves the very large number of organic and inorganic chemicals from which the 'final products' are made, Some division of these into sectors seems desirable, but how it should be made, both conceptually and in practice, requires further detailed study which CIA proposes to undertake.

5. Summary of Recommended Changes in Official Statistics

The CIA's main recommendations may be summarized as follows:

1 Align chemical industry statistics with the EDCCI definition of the industry (ML Headings 271–277), and publish import and export totals corresponding to this definition.
2 Revise selection of sectors, and provide the main statistical series for output, investment and manpower in consistent and comparable sector breakdown.
3 Provide annual statistics of:
  (*a*) gross output
  (*b*) net output
  and if possible
  (*c*) gross output free of duplication.
4 Harmonize Board of Trade and Ministry of Labour statistics of numbers employed.
5 (*a*) Revise import and export classifications to provide published details for important single products or coherent groups of products.
  (*b*) HM Customs and the industry to seek ways of minimizing the effect of suppressions.
6 Revise and extend production statistics for the industry's major products.

The main substance and purpose of these recommendations is to introduce consistency into the definition coverage and sector breakdown of each of the main statistical series, so that it will be possible to relate items such as output, numbers employed and investment to each other and to establish their trends in order to base forecasts and estimates upon them. Once this consistent basis is firmly established it can be developed with appropriate detail in future years to keep in step with the growing ability of firms to produce more refined statistics using computer methods, and with the growing ability of Government and others to use such information in building more detailed models of the economy. As it is the full Census of Production which will provide the foundations for future sector analysis, it is important that the changes suggested should be carried through in time to be incorporated in the design of the 1968 census.

INTERNATIONAL CHEMICAL STATISTICS—HISTORICAL BACKGROUND AND CURRENT PROBLEMS

H. G. HUMPHRY

OECD

Chemical Group/ECMRA Conference on Commercial Intelligence, Tuesday 12th November 1968

MAY I start by saying how happy OECD is to have been asked to take part in this meeting on documentation for the chemical industry. One of the many problems of the international civil servant is the lack of contact with the persons who use our publications in their daily work. As you know, OECD's regular publications on the chemical industry are limited in fact to an annual report which we, of course, consider serves a useful purpose. We sometimes wonder, however, how far it meets the reader's requirements. In order to find this out, we enclosed an enquiry card in our 1965/66 report and, while we had a fairly good response, we gained the impression that readers wished us to expand the statistical coverage without giving us any clear indication as to those parts of the report which they considered satisfactory and those which were rather weak. We have our own views on this subject but realize that opinions formed in the isolation of an office in Paris may not always be valid. It would, therefore, be useful to have confirmation of our views on those chapters which need expanding and of our impression that other parts of the report could be condensed.

OECD is probably one of the less well-known international organizations and I should perhaps begin by dealing briefly with our overall aims. They can be summarized in very few words: economic growth, trade, aid. OECD is an inter-governmental organization where work is organized with a view to exchanging information between governments. This usually takes the form of a dialogue between member countries which allows them to bring the current situation to light and to examine the problems which arise with a view to resolving them. One of the essential roles of the organization is to gather together information on a variety of subjects, including one dealt with in particular in that branch of the organization of which the chemical section is a part: the analysis of policies affecting industrial development. The Chemical Products Committee and four other Committees, each in its own industrial sector, help the Industry Committee to analyse the industrial trend, studying such questions as the structure of the industry and technical progress and ascertaining to what extent the relationship between the two has been influenced by governmental action.

OECD and its predecessor, the OEEC, have certainly done more than any other international organization in the field of chemical statistics. The United

Nations publishes import and export data based on the Standard International Trade Classification which is also used by OECD in its trade bulletins but there is no publication of the United Nations dealing with production trends in the world chemical industry. Indeed, we are the only Organization publishing a report which endeavours to follow the trend both in production and trade in the sector. Admittedly, in view of the vast field to be covered, we have not been able to enter into the wealth of detail which will be found in the reports of the FAO on the fertilizer sector or in our reports on fertilizers which were discontinued in 1964 in order to avoid overlapping in the publications of international organizations. Nevertheless, over the years we have managed to improve the coverage of our report and have succeeded, I hope, in making them more useful for market research purposes.

The OECD reports cover virtually all the industrialized countries of the western world. We have, of course, only twenty-one member countries, eighteen in Western Europe, plus the United States, Canada and Japan. A twenty-second country, Finland, is likely to join us very soon.

In order to make available comparable data for Eastern Europe, the Economic Commission for Europe in Geneva has prepared a similar publication to ours giving figures for both the Eastern and Western European countries but dealing more fully than OECD does with the technological aspect of the situation. The first ECE report should be available towards the end of the year, but in view of the work involved in covering a yet wider range of countries than we include (and we are fully aware that it already takes too long to collect and tabulate figures for the twenty-one OECD Members), it looks improbable that the ECE reports will be prepared on an annual basis.

I imagine that most people present at this meeting already know OECD's general statistical publications and those dealing more exclusively with the chemical field, but perhaps it would be useful to look briefly at the progress made in the last twenty years in improving our statistics and at the methods we use in preparing our report. The Organization preceding OECD, the OEEC, was set up in 1948 as a result of a speech made twelve months earlier by the US Secretary of State, George Marshall. Its aim, put in a nutshell, was to translate the Marshall Plan into practical terms in an international context. From the outset, the Organization had a Chemical Products Committee composed of officials assisted by non-governmental experts which originally played a role in advising on the allocation of Marshall Aid, a task which quickly brought into evidence the dearth of chemical statistics. From the start, figures were collected for certain major products of the industry (fertilizers, sulphur, etc.) but the data available were often not very reliable and figures were limited in any case to a very narrow range of products. Moreover, the information collected was only made known to national delegations to OEEC. In view of the limited membership of the Committee, and the need to expand the distribution of our publications, the Committee decided in 1954 to prepare an annual report on the chemical industry. The first report, like all the following ones, is a report of the Chemical Products Committee. It is printed only after approval by the Committee, unlike other OECD reports and those issued by many international bodies which have been prepared exclusively by the Secretariat or consultants and are issued under their responsibility. The reports are drawn up on the basis of material obtained from national delegations by means of an annual questionnaire sent to member governments early in the year. This method, while ensuring that the report contains only official statistics, obviously has its shortcomings. The structure of national civil services varies considerably from one country to the next and some governments have at their disposal a much more complex statistical apparatus than others. Some have a fairly large department in their Industry Ministry run by a person having spent virtually his whole working life on the industry's problems and thus fully cognisant of the difficulties of the sector and the possibility of obtaining an improved picture, statistically speaking. In other countries the chemical department is virtually non-existent, the person responsible dealing with a wide range of other industries and having a detailed knowledge of none of them. In yet other countries, there is not even a department responsible for the chemical industry, and thus we have to rely for the preparation of our reports on the co-operation of trade associations.

The first reports dealt with very few sectors of the industry but, as time went on, more and more stress was laid on the sector approach, the Committee being helped in the preparation of its reports by a number of specialized working parties. Sometimes the task of these working parties was a relatively easy one since a common nomenclature had already been worked out by an international professional body such as, in the case of our Working Party on Soaps and Detergents, the Association Internationale de la Savonnerie. In other cases the task is much more difficult. The Working Party on Petroleum Chemicals, for instance, which first met in 1953, had to work out an entirely new method for collecting data relating to this rapidly growing branch of the chemical industry. The statistics initially collected were not published. The first which we made available, and then in a very abridged form, are given in our 1961/62 report. The reason for this was that in the fifties too few firms were engaged in this industry for it to be possible to publish figures without revealing the performance of the individual firm. The data collected was, moreover, limited to total output of aromatics and C_1, C_2, C_3, C_4 and C_5 and higher aliphatics, all expressed in terms of carbon content. As the petroleum chemical industry grew and as it became more and more apparent that it was impossible to make a clear cut distinction between chemicals based on coal and oil, the statistical framework initially adopted had to be abandoned and in our 1962/63 report we tried to outline the broad trend in the whole of the organic chemical industry. The conversion of all figures on to a carbon content basis was retained for a few more years but as you will have noticed we discarded the publication of figures in terms of carbon content in the 1966/67 report since it was felt that the greater accuracy obtained by expressing production in terms of carbon content did not justify all the work entailed in making the necessary calculations.

Since 1958, however, serious efforts have been made to ensure the publication of an increasing volume of general statistics for the chemical industry since it was apparent from the start that, although trade figures were available in ample detail, the same was not true of turnover, value added, investment, etc. Once again major problems have arisen, since not all countries use the same definition of the chemical industry for statistical purposes as that adopted by OECD nor do they employ the internationally accepted method for calculating turnover, value added, etc., i.e. those set out in United Nations publications. I should perhaps point out that OECD can only make recommendations to its member governments and has no power to oblige them to supply data on a given (or for that matter, on any other) basis. We can thus only hope with time to persuade our member governments that, for purposes of international comparison, it would be advisable to publish statistics drawn up in the same manner. Staff shortages in national administrations make it nevertheless unlikely that we will rapidly succeed in having all the re-calculations done to make figures fully comparable.

Our policy is to publish all the information we receive (unless, of course, the declaring country expressly asks that its figures be kept secret). Thus, the visitor to Paris who hopes to find a wealth of interesting data hidden away in our files is bound to be disappointed.

From my previous remarks, I hope that it is evident that the OECD is fully conscious of the need to improve its reports, although, looking back at the progress made in the last fourteen years, we cannot but be pleased that we have already got so far. We fully realize that at the moment we are in fact largely putting together in a single publication figures which are in general already available in international statistics and that something needs to be done to broaden this approach and to eliminate the shortcomings of the report as it now stands.

The comparability of the general statistics must be improved since they are used for economic comparisons and as they stand are liable to lead to erroneous conclusions. This is a question to which the OECD Industry Committee which is endeavouring to improve the international comparability of industrial statistics attaches considerable importance. Whereas the global figures for the European chemical industry may be sufficiently accurate to show the overall trend, once data for one major European country is compared with that for another, the differences are often too marked for any logical explanation to be found.

But perhaps our major preoccupation at the present time is to improve certain parts of the report. We are fully aware that the chapter on organic chemicals is weak. The figures so far available for aliphatics and aromatics allow us to follow the overall trend or rather they will allow us to do so when we have a series of figures for a sufficiently long period. But, even when we have such a series for five or six years, we will nevertheless only have a very broad picture of the organic chemical industry and one which I gather is hardly adequate for market research purposes. The Secretariat is anxious to publish data for a wider range of products or product groups but the problem of industrial secrecy always arises when we try to do this. One way around this difficulty is for individual firms to send OECD (whether through their national administrations or not) figures on a confidential basis. We would then publish totals for Europe preferably broken down into EEC and EFTA countries, although we realize that, even here, there would be greater risk of disclosure. However, before we try to launch a scheme such as this which will obviously entail considerable work for the Secretariat, particularly in the early stages before the scheme is safely under way, we need to be sure that figures of total European production of such and such a product would really serve a useful purpose.

Another part of the report which fails to satisfy us is the final chapter which deals with the 'other sectors of the chemical industry'. This chapter lacks proportion. As much emphasis is laid on the tanning products sector which even in the three or four countries particularly interested in the field, is nevertheless of negligible importance as on the paints and varnishes and soaps sectors and much more than on the pharmaceutical products and phytosanitary products sectors where rapid developments are now taking place. In fact, we feel that the pharmaceutical products sector which accounts for about 12 per cent of both the chemical industry's turnover and total chemical exports is dealt with singularly inadequately. Admittedly, it is difficult to see how we can improve matters. To trace growth in key products such as antibiotics or vitamin preparations might be useful were figures on a comparable basis available but I doubt whether we would ever get very far on these lines. We should certainly try, however, to improve our statistical coverage since the report drawn up by the OECD Science Directorate on technological gaps in the pharmaceutical products sector and shortly to be published, although prepared admittedly with a different aim in view than that of the economic analysis of the sector, shows how lacking the Organization's information was and still is.

In our view, it would furthermore be useful if our reports were to contain from time to time an appendix dealing with the trend in production and consumption in one or other essential chemical product or one where a particular problem has arisen. We shall perhaps be carrying out in the near future studies on butadiene and benzene which are not at present intended for publication but I nevertheless hope to be able to make them available in this way.

Lastly, the Secretariat would like to include in our reports every few years forecasts of future growth in the chemical sector. We realize how difficult it is to do this for an industry covering as wide a range of products as the chemical industry does. To relate the growth of chemicals to that of gross national product gives a very broad idea of the possible future trend but one which is in fact so broad it is probably not very helpful. We realize that it would be best to apply a sector approach but how do we forecast the trend for basic organics for instance? The problems involved in forecasting are obviously enormous but it is doubtful whether they should be shirked. An international organization which looks exclusively at the past without drawing any conclusions as to the future trend is abdicating from one of its obvious duties and merits the lack of interest which this attitude is likely to evoke.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

*Items are available in the Aslib Library and may be borrowed unless marked * to indicate reference copies.*

User Studies

KOCH, INGE

Wie informieren sich die Wissenschaftler uber die fur sie wichtige Literatur? *Zentralblatt fur Bibliothekswesen,* vol.82, no.11, November 1968, p.651–66.

Describes an investigation undertaken by the forestry faculty of Dresden Technical University into the methods used by scientists to find out about important literature. There was a sample of forty-five scientists and the personal inquiry method was used.

GERSTBERGER, PETER G., *and* ALLEN, THOMAS J.

Criteria used by research and development engineers in the selection of an information source.

Journal of Applied Psychology, vol.52, no.4, 1968, p.272–9.

Investigates the means and habits employed by engineers in searching for technical information.

DUX, WERNER

Zur Ermittlung des Informationsbedürfnisses von Wissenschaftlern aus der Zentralstelle fur Korrosionsschutz in Rossendorf bei Dresden.

Zentralblatt für Bibliothekswesen, vol.82, no.11, November 1968, p.640–51.

Reports the results of an inquiry made at the Centre using the questionnaire method. The sample included a group of engineers from other institutions.

HAZELL, J. C., *and* POTTER, J. N.

Information practices of agricultural scientists.

Australian Library Journal, vol.17, no.5, June 1968, p.147–59.

Survey of reading and writing by professional staff of the New South Wales Department of Agriculture, carried out by a questionnaire, concerned particularly with periodicals and abstracts.

LINE, MAURICE B.

The social scientist and his information needs.

In LIBRARY ASSOCIATION. R.S. and I. Section Proceedings . . ., 1968, p.10–18, Discussion p.18–20.

KEEGAN, WARREN J.

How and where do executives acquire important business information?

Incentive, no.11, August 1968, p.11–13.

A survey carried out at Columbia Graduate School of Business. Fifty top executives were interviewed. Notes the emphasis placed on face-to-face contact.

DRAGE, J. F.

User preferences in published indexes: a preliminary test.

Information Scientist, vol.2, no.3, November 1968, p.111–14.

A brief account of a simple test to obtain user reactions to changes in presentation of the indexes to *Sugar Industry Abstracts.*

CLARIDGE, P. R. P.

What the user needs from microforms. Paper given to seminar of National Reprographic Centre for Documentation, Hatfield, April 1968. Stevenage, Herts., Warren Spring Laboratory, 1968.

9 p.

Library Systems

BUSSE, GISELA VON, *and* ERNESTUS, HORST

Das Bibliothekswesen der Bundesrepublik Deutschland: eine Einfuhrung. Wiesbaden, Otto Harrassowitz, 1968.

302 p., illus., map.

'NATIONALBIBLIOTHEK' und zentrale universale Bibliotheken.

In BUSSE, GISELA VON. Das Bibliothekswesen der Bundesrepublik Deutschland, 1968, p. 50–8.

LIBRARY ASSOCIATION. Reference, Special and Information Section

Proceedings of the 16th annual conference and study group, Durham, 19th–22nd April 1968; edited by Patricia Layzell Ward. London, the Section, 1968.

62 p.

VAVREK, BERNARD F.

A theory of reference service.

College and Research Libraries, vol.29, no.6, November 1968, p.508–10.

Stresses the importance of the reference service to aid the flow of needed information to the user.

KLEINER, JANE P.

The information desk: the library's gateway to service.

College and Research Libraries, vol.29, no.6, November 1968, p. 496–501.

Report of an Association of Research Libraries Survey into provision of Information Desks in member libraries.

DEAS, J. H.
College of education libraries.
Education Libraries Bulletin, no.32, Summer 1968, p.10–19.
An address delivered to the AGM of the Colleges, Institutes and School of Education Sub-section of the Library Association, University, College and Research section, 5 January 1968. The history and purposes of college of education libraries are outlined.

HARO, ROBERT P.
Research unit libraries as special libraries on the campus.
Special Libraries, vol.59, no.8, October 1968, p.634–7.
Describes the history, purpose and function of specialized libraries for research units in colleges and universities.

BIBLIOTHEKEN der Universitaten und Hochschulen.
In BUSSE, GISELA VON. Das Bibliothekswesen der Bundesrepublik Deutschland, 1968, p.61–74.

HAYES, R. M.
Mechanized information services in the university library: introduction and summary.
In CALIFORNIA. University. . . . Mechanized information services . . ., 1967, vol.1, part 1.

SHOFFNER, RALPH
Joint design and development of library systems.
In CALIFORNIA. University. . . . Mechanized information services . . ., 1967, vol.2, part 12.

BIBLIOTHEKARISCHE Zusammenarbeit und zentrale Einrichtung.
In BUSSE, GISELA VON. Das Bibliothekswesen der Bundesrepublik Deutschland, 1968, p.138–71.

KAMP, C.
Co-operative libraries.
Unesco Bulletin for Libraries, vol.22, no.6, November–December 1968, p.291–6.
Describes the aims and functions of the International Working Party of Co-operative Librarians and Documentation Officers. Includes numbers and sizes of libraries and short descriptions of some.

Administration and Management

ASSOCIATION OF ASSISTANT LIBRARIANS. South East Division
Management for librarians; based on course of lectures at the Library Association in 1967. Edited by J. Cloke. London, the Association, 1968.
v, 37 p.

BELLOMY, F. L.
The systems approach solves library problems.
ALA Bulletin, vol.62, no.9, October 1968, p.1121–5.
Indicates how systems analysis can be used to improve library operations. Enumerates twelve steps comprising the systems approach.

KORTZFLEISCH, HERMANN VON
Rationalisierungsreserven in wissenschaftlichen Bibliotheken.
Zeitschrift fur Bibliothekswesen und Bibliographie, vol.15, no.5/6, 1968, p.324–39.
The rationalization of library administration. Includes organization of staff, duties, selection, cataloguing, co-operation.

ASSOCIATION OF COLLEGE AND RESEARCH LIBRARIES. Committee on liaison with accrediting agencies
Guide to methods of library evaluation.
College and Research Libraries News, no.9, October 1968, p.293–9.
Designed to aid judgment of the adequacy of an academic library.

SEWELL, P. H.
The evaluation of library services in depth.
Unesco Bulletin for Libraries, vol.22, no.6, November–December 1968, p.274–80.
Discusses purposes of evaluation and the use of standards and statistics.

PINGS, VERN M.
Development of quantitative assessment of medical libraries.
College and Research Libraries, vol.29, no.5, September 1968, p.373–80.
Method developed by Institute for the Advancement of Medical Communication.

KILPELA, RAYMOND
The administrative structure of the university library.
College and Research Libraries, vol.29, no.6, November 1968, p.511–16.
Report of a survey by questionnaire. Thirty-nine large university libraries were involved.

LUMB, A. E., *and* SLONKOVA, M.
Overdue notices in a university library.
Library Association Record, vol.70, no.12, December 1968, p.315–16.
Use of Xerography at University of Salford Library.

AMERICAN LIBRARY ASSOCIATION. Library Administration Division. Personnel Administration Section. *Publications Committee*
Personnel organization and procedure: a manual suggested for use in college and university libraries; 2nd ed. Chicago, Ill., the Association, 1968.
63 p.

ORNE, JERROLD
Academic library building in 1968.
Library Journal, vol.93, no.21, December 1 1968, p.4493–7.
A statistical report on the sixty-two new library buildings reported for four-year colleges and universities.

PAUER, MAX
Die Universitatsbibliothek Regensburg im Aufbau.
Dokumentation, Fachbibliothek, Werksbucherei, vol.17, no.2, December 1968, p.43–8.
An illustrated description of the university library now in construction at Regensburg with particular emphasis on the data processing centre being established.

CHEMISTS rehoused.
Nature, vol.220, no.5173, 21 December 1968, p.1166–7.
Brief description, with illustration, of the Chemical Society's new library at Burlington House.

BANKS, PAUL N.
Some problems in book conservation.
Library Resources and Technical Services, vol.12, no.3, summer 1968, p.330–8.
Need for librarians specializing in book conservation.
Standards, methods and machines for binding and the preservation of book papers are discussed.

POOLE, FRAZER G.
Preservation costs and standards.
Special Libraries, vol.59, no.8, October 1968, p.614–19.
Standards of performance for various preservation techniques are given, based on present knowledge. Costs of work in commercial shops and the Library of Congress are given.

COOPER, MARIANNE
Criteria for weeding of collections.
Library Resources and Technical Services, vol.12, no.3, Summer 1968, p.339–51.
Certain objective measures for weeding are presented and the use of such measures at Columbia University is described. Criteria for weeding must be based on the goals of an institution and use patterns in different disciplines.

BRADEN, IRENE A.
Pilot inventory of library holdings.
ALA Bulletin, vol.62, no.9, October 1968, p.1129–31.
Describes survey to estimate percentage of missing books. The areas where losses are high also tend to indicate the areas of most frequent use.

Printing and Publishing

*UNITED STATES. Library of Congress
The national union catalogue: pre-1956 imprints. Volume 1—Symbols—Abhandlu. [Chicago?], American Library Association, 1968.
698 p.

NEELAMEGHAN, A.
Typographical quality and legibility of print and comfort of reading: a review.
Library Herald, vol.9, no.4, January 1967–8, p.271–91.
Bibliography of 33 items.

HOW much do science books cost?
Nature, vol.220, no.5171, 7 December 1968, p.987.
A report, with tables, of the increase in price of books in comparison with the price of scientific and technical texts.

BROWN, JOHN
University press publishing.
Library Association Record, vol.70, no.12, December 1968, p.310–14.
Abridged version of lecture at the Yorkshire Group of the University, College and Research Section, Leeds, 23rd March 1968.

*LEWIS, P. R.
British National Bibliography current book-list services volume and distribution of subscriptions and characteristics of use and requirements in the United Kingdom. [London, Council of the BNB], 1968.
Var. pag. (The use of British National Bibliography services in the United Kingdom. Research programme at the School of Library Studies in the Queen's University of Belfast. Report no.5.)

VINÁREK, JOSEF, *and* TĚŠITEL, ALOIS
Knihovny v U.S.A. Prague, Orbis, 1968.
229 p., illus.

WEISMAN, HERMAN M.
Basic technical writing, 2nd ed.
Columbus, Ohio, Charles E. Merrill, 1968.
498 p.

HOLLOWAY, A. H., *ed.*
The layout of technical reports. [Paris], North Atlantic Treaty Organization. Advisory Group for Aerospace Research and Development, 1968.
17 p. (N68—23536. Spec. 1 Rev. 1.)

HERRING, CONYERS
Distill or drown: the need for reviews.
Physics Today, vol.21, no.9, September 1968, p.27–33.
Discusses the need for reviewing journals in the face of the information explosion.

HAWES, CLINTON, *and* HARKINS, CRAIG
Writing an abstract months before the paper.
Technical Communications, vol.15, no.4, 1968, p.16–18.

COMPARATIVE study on copyright: translators' rights
Unesco Copyright Bulletin, vol.2, no.3, 1968, p.15–41.

Reprography

*INTERNATIONAL CONGRESS ON REPROGRAPHY, 2nd, 1967

Dictionary of reprography: German–English, English–German; preface by H. Arntz. n.d.

55 p.

*MASON, DONALD

Document reproduction in libraries. London, Association of Assistant Librarians, 1968.

149 p., illus. 26*s.*

GARDINER, A. W.

Typewriting and office duplicating processes. London, New York, Focal Press, 1968.

168 p., illus. (The Reprographic Library, no.1.) 30*s.*

*BRUIN, J. H. I. DE, *comp.*

Microfiche equipment . . .: a survey of microfiche equipment; 2nd rev. ed. Delft, Microfiche Foundation, 1968.

38 p. (Publications on the microfiche no.10.) First published by Mrs N. Brantley and Mrs S Hansen, 1966.

HARRIS, P. S.

Specification for microfiche copies of periodicals. Stevenage, Herts., Warren Spring Laboratory, 1968.

7 p.

COSTS of print stores eliminated by microfilm and dry silver print system.

Microdoc, vol.7, no.3, 1968, p.70–1.

Describes the Microfilm System 1 of the 3M Company installed by Thorn Automatic Ltd for issuing engineering drawings.

NATIONAL REPROGRAPHIC CENTRE FOR DOCUMENTATION

A technical appraisal of the 70MM format for map reproduction: papers of a symposium held at Hatfield Technical College, 10th January, 1968. [Hatfield, Herts] Hertfordshire County Council. Technical Library Service, 1968.

44 p., illus.

SCHIEBER, WILLIAM D., *and* SHOFFNER, RALPH M.

Telefacsimile in libraries: a report of an experiment in facsimile transmission and an analysis of implications for interlibrary loan systems. [Berkeley.] University of California, Institute of Library Research, 1968.

137 p., tables.

MANNING, JOSEPHINE

Facsimile transmission: problems and potential.

Library Journal, vol.93, no.19, 1 November 1968, p.4102–4.

Discusses the findings of three recent studies in the use of facsimile transmission: at the University of Nevada, in Hawaii, and at the New York State Library.

Subject Organization

FACH-und Spezial bibliotheken

In BUSSE, GISELA VON.

Das Bibliothekswesen der Bundesrepublik Deutschland, 1968, p.74–128.

NEELAMEGHAN, A.

Discovery, duplication, and documentation: a case study.

Library Science, vol.5, no.3, September 1968, p.264–88.

Data on the duplication of discoveries of antibiotics, 1907–1967, the usefulness of documentation in this context is mentioned.

FRANCIS, L. S., *and* WARREN, P. J. R.

Medlars indexing delays—a measure of progress.

Bulletin, Medical Section of the Library Association, no.75, November 1968, p.5–8.

A survey of *Index Medicus* before and after MEDLARS. Discusses up-to-dateness of references in particular foreign material.

WESSEL, CARL J.

The information background in the field of biological deterioration of non-metallic materials.

Materials Research and Standards, vol.8, no.9, September 1968, p.10–17.

Outlines methods of obtaining published information in the field.

DETANT, MARCEL

La documentation automatique du C.I.D. à l'Euratom.

Industrie Chimique Belge, vol.33, no.10, 1968, p.866–78.

General survey of the continuing problems of Euratom's Information and Documentation Centre. These include thesaurus control on the input side, and question formulation on the output side.

ACRITEI, STEFANA

Propaganda pentru cartea technica în intreprindere.

Probleme de Documentare şi Informare, vol.2, no.10, October 1968, p.641–4.

Methods used at the Bacău screw factory for popularizing various forms of documentary material.

DAVID, ANTOINETTE

L'information dans le domaine de l'energie en France.

Bulletin des Bibliothèques de France, vol.13, no.9–10, September–October 1968, p.397–416.

The structure of the French network of information on energy is described, and the co-operation between information centres made possible by the use of computers.

SMITH, F. SEYMOUR
Subject dictionaries and encyclopaedias. Part 3.
British Book News, no.340, December 1968, p.875–82.

NEAL, K. W.
Teaching method in further education: a guide to the literature. Manchester, Manchester College of Commerce. Department of Librarianship, 1968.
64 p.

BUCKLAND, MICHAEL K.
British sources of information for marketing studies.
In KELLEY, WILLIAM T.
Marketing intelligence, 1968, p.178–200.

BISCO, RALPH
On the development of social science information and documentation services (interim report).
In CALIFORNIA. University. . . . Mechanized information services . . ., 1967, vol.2, part 11.

HARVEY, JOAN M.
Sources of statistics. London, Clive Bingley, 1969.
100 p.

EVANS, G. R.
Literature survey of information storage and retrieval systems (manual and automated) for law libraries. Palo Alto, Calif., Lockheed Missiles and Space Company, 1968.
18 p. (AD 671 354.) $3.00

*INTERNATIONAL computer bibliography:
a guide to books on the use, application and effect of computers in scientific, commercial, industrial and social environments. Manchester, National Computing Centre; Amsterdam, Stichting Het Nederlands Studiecentrum voor Administratieve Automatisering, 1968.
327 p.

Mechanization

CALIFORNIA. University. *Institute of Library Research*
Mechanized information services in the university library. Phase 1—Planning. Los Angeles, Calif., the Institute, 1967.
2 vols. (PB 178 441/2.)

COLLOQUE SUR L'AUTOMATISATION DES SYSTEMES DOCUMENTAIRES, Paris, 25 January, 1968
A.N.R.T. Information et Documentation, no.7, 15 September 1968, 24 p.
Colloquium on the Automation of Documentation Systems, organized by l'Association Nationale de la Recherche Technique; report by Phillipe Aries and discussion p.12–19.

PARKER, RALPH
A feasibility study for a joint computer centre for five Washington, D.C. university libraries; final report. Washington, D.C., Consortium of Universities of Metropolitan Washington, 1968.
37 p.

LEONARD, LAWRENCE E., *and others*
Colorado academic libraries book processing center study. Boulder, Colo., Colorado University, Norlin Library, 1968.
397 p. (PB 178 421.)
6 microfiches.

DOLBY, J. L., *and others*
An evaluation of the utility and cost of computerized library catalogs. Final report. Project no.7–1182. [Washington], U.S. Department of Health, Education and Welfare Office of Education, Bureau of Research, 1968.
204 p. tables.

AVRAM, HENRIETTE D.
MARC: the first two years.
Library Resources and Technical Services, vol.12, no.3, Summer 1968, p.245–50.

LEACH, THEODORE EDWARD
A compendium of the MARC system.
Library Resources and Technical Services, vol.12, no.3, Summer 1968, p.250–75.
The techniques and operations for the generation of, maintenance of, and retrieval from a machine-readable catalog composed of bibliographic information in digital form.

SIMMONS, P. A.
An analysis of bibliographic data conversion costs.
Library Resources and Technical Services, vol.12, no.3, Summer 1968, p.296–311.
Cost studies of the MARC Pilot Project provide basis for performance budgeting and improvement of the input system.

KNAPP, JOHN F.
Design considerations for the MARC magnetic tape formats.
Library Resources and Technical Services, vol 12, no.3, Summer 1968, p.275–85.

PARKER, PATRICIA E.
The preparation of MARC bibliographic data for machine input.
Library Resources and Technical Services, vol.12, no.3, Summer 1968, p.311–19.
Describes editing forms and procedures of the MARC Pilot Project and their evolution and change.

YEATTS, WENDELL A., *and* REILLY, KEVIN D.
Experience with Library of Congress MARC tapes.
In CALIFORNIA. University. . . . Mechanized information services . . ., 1967, vol.1, part 7.

HOLMES, ROBERT R.
Introduction to the seventh edition of subject headings used in the dictionary catalogs of the Library of Congress.
Library Resources and Technical Services, vol.12, no.3, Summer 1968, p.323–9.
The history of the list, the automated techniques used in the production of the seventh edition and possible future benefits resulting from automated techniques.

SCOTT, JACK W.
An integrated computer-based technical processing system in a small college library.
Journal of Library Automation, vol.1, no.3, September 1968, p.149–58.
Describes a listing system now used at the Lorain County Community College using a 2201 Friden Flexowriter, an IBM 026 key punch and an IBM 1440 computer.

AYRES, F. H., *and others*
AMCOS (Aldermaston Mechanized Cataloguing and Ordering System) 2nd report: stage one operational.
AWRE Library Information Note, no.68/10, November 1968, 9 p.

CHEN, CHING-CHIH, *and* KINGHAM, E. ROBERT
Subject reference lists produced by computer.
Journal of Library Automation, vol.1, no.3, September 1968, p.178–97.
Describes the IBM 360/75 computer system developed at the University of Waterloo, Canada, to produce subject reference lists; discusses advantages and analyses costs.

HIRST, ROBERT I.
Adapting the IBM/ST for library applications: a manual for planning.
Special Libraries, vol.59, no.8, October 1968, p.626–33.
Discusses a standard IBM Selectric typewriter and the methods used to produce catalogue cards, book orders, spine labels, book cards, book pockets and cross references. Problems, financial aspects, operator training and other possible applications are mentioned.

KOUNTZ, JOHN C.
Cost comparison of computer versus manual catalog maintenance.
Journal of Library Automation, vol.1, no.3, September 1968, p.159–77.
Reports the method developed by the Orange County Public Library, for comparing costs of an automatic and a manual catalogue system. The cost per entry was found to be less for the computer-assisted system.

MURRILL, DONALD P.
Production of library catalog cards and bulletin using an IBM 1620 computer and an IBM 870 document writing system.
Journal of Library Automation, vol.1, no.3, September 1968, p.198–212.
Describes a system developed by the Philip Morris Research Center Library; includes estimates of costs and production times.

AUGOSTINI, LOUIS P., *and* KRAY, JOHN F.
A role for automation in indexing.
Technical Communications, vol.15, no.4, Fourth Quarter 1968, p.9–11.
A computerized method of index preparation is described.

MAGNETIC tape story
Computer Weekly, no.117, 12 December 1968, 8 p.
Supplement with headings—Recertification; Prevent trouble; Tape manufacture; Packing densities; Care is needed; Tape and Disc; Data preparation.

DAVISON, P. S., *and others*
Ageing of magnetic tape: a critical bibliography and comparison of literature sources.
Computer Journal, vol.11, no.3, November 1968, p.241–6.

IGLESIAS, CELINA MUNIN
Audio-visual material and libraries.
Unesco Bulletin for Libraries, vol.22, no.6, November–December 1968, p.285–90.
The use of A/V materials for education, social change and practical purposes in libraries.

BUSINESS FORMS INTERNATIONAL, INC.
The optical character recognition supplement. Fort Lauderdale, Fla , the Corporation, 1968.
40 p., illus.

NEEDHAM, ROGER, *and* HARTLEY, DAVID
Security in multi-access systems.
Computer Weekly, no.115, 28 November 1968, p.6.

*COHAN, LEONARD, *ed.*
Directory of computerized information in science and technology. (DCIST). New York, Science Associates/International, Inc., 1968. Various p. (International Information Network Series.)

WIEDLING, STEN
Skrivmaskiner med kemiska symboler.
Tidskrift för Dokumentation, vol.24, no.5, 1968, p.70–3.
Describes a tape-typewriter with chemical symbols in use at the Astra central chemical register, Sweden.

Classification and Cataloguing

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th international edition. 628 Public health engineering. London, the Institution, 1968.
28 p. (BS 1000 [628]: 1968.)

NYSTRÖM, ANDERS

Universal Decimal Classification for computer-aided documentation.
Tidskrift för Dokumentation, vol.24, no.5, 1968, p.67–70.
Surveys the papers presented at the Seminar on UDC in a Mechanized Retrieval System, Copenhagen, 2–6 September 1968.

BOSE, H.

Universal Decimal Classification in transition.
Library Herald, vol.9, no.4, January 1967–8, p.297–312.
Changes in form and concepts undergone by UDC from 1943 to 1965. Methods for contracting elongated UDC numbers for compound and complex subjects.

GUPTA, A. K.

Interpolation of basic subjects in Colon Classification.
Library Science, vol.5, no.3, September 1968, p.199–216.
The need for, and devices of, interpolation.

GUPTA, K. BALASUNDARA

Facet analysis and machine coding.
Library Herald, vol.9, no.4, January 1967–8, p.292–6.
Usefulness of faceted classification as a language for mechanized information retrieval.

PARKHI, R. S.

Trend in the use of connecting digits.
Library Science, vol.5, no.3, September 1968, p.217–29.
Compares the use of connecting digits (connecting symbols, facet indicators, signal digits) in seven classification schemes.

FILL, KARL

Versuch einer Analyse der Verwendung von Klassification.
DK-Mitteilungen, vol.13, no.3, May 1968, p.11–12.
A survey of the classification schemes used in West German documentation centres.

MILLS, J.

Some current problems of classification for information retrieval.
Classification Society Bulletin, vol.1, no.4, 1968, p.18–27.
Address given to the Society, 2nd November 1967.

MAYNE, ALAN J.

Some modern approaches to the classification of knowledge.
Classification Society Bulletin, vol.1, no.4, 1968, p.12–17.
Address given to the Society, 2 November 1967. Outlines the requirements recorded for improved classification of knowledge in the future and the practical areas where they could be applied.

FOSKETT, D. J.

Some historical aspects of the classification of knowledge.
Classification Society Bulletin, vol.1, no.4, 1968, p.2–11.
Address given to the Society, 2 November 1967. The historical development of the idea of a knowledge classification from Thales and Plato to Ranganathan.

EBY, FRANK H.

A marketing information classification system.
In KELLEY, WILLIAM T.
Marketing intelligence, 1968, p.169–77.

SNEATH, P. H. A.

Annotated bibliography on recent advances in numerical taxonomy, with special reference to botanical systematics.
Classification Society Bulletin, vol.1, no.4, 1968, p.49–58.
The emphasis is on systematics of higher plants but selected references to taxonomy of flowering plants are included.

SNEATH, P. H. A.

The future outline of bacterial classification.
Classification Society Bulletin, vol.1, no.4, 1968, p.28–45.
A lecture given at Maryland University, 19th March 1968.
Discusses the aims of a good classification and its application to taxonomic data. Outlines present trends and practical developments stemming from this. Includes a bibliography.

GATZOW, HAROLD

Avoid design duplication with a graphics classification system.
Machine Design, vol.40, 18 July 1968, p.152–6.

RANGANATHAN, S. R., *and* BHATTACHARYYA, G.

Cataloguing terminology.
Library Science, vol.5, no.3, September 1968, p.230–63.
Emphasises the need for a special cataloguing terminology and compares some definitions in the ALA Code and CCC.

SOUNDWELL Technical College

Catalogue and Index, no.12, October 1968, p.4–5.
Studies in central cataloguing—2. Acquisition and cataloguing, with diagram, of books at Soundwell Technical College.

MANGLA, P. B., *and* SARDANA, J. L.

Corporate author: government.
IASLIC Bulletin, vol.13, no.2, June 1968, p.149–63.
A comparative study of rules in Ranganathan's Classified Catalogue Code and the Anglo-American Rules (1967).

SALTON, GERARD

The use of standardized documentary data

in automatic information dissemination.
IEEE Transactions on Engineering Writing and Speech, vol. *EWS-11*, no.2, August 1968.
Standardized items of information required for listing each document.

TROUTMAN, JOAN C.
Standards for cataloguing of magnetic tape material.
In CALIFORNIA. University . . . Mechanized information services. . . ., 1967, vol.1, part 4.

SEELY, PAULINE, *ed.*
ALA rules for filing catalog cards; 2nd ed. Chicago, American Library Association, 1968.
xii, 260 p., bibliog.

HAMMER, DONALD P.
A review of the ASTM CODEN for periodical titles.
Library Resources and Technical Services, vol.12, no.3, Summer 1968, p.359–65.

Language and Indexing

FUELLHART, PATRICIA O., *and* WEEKS, DAVID C.
Compilation and analysis of lexical resources in information science. Washington, D.C., George Washington University, June 1968.
46 p. (AD 671 148.)
1 microfiche.

VEREVCENKO, A. P., *and* PETROV, JU. G.
Anwendung eines permutierten Registers zur Analyse und Vervollkommnung von Thesauri.
ZIID Zeitschrift, vol.15, no.5, October 1968, p.206–9.
Discusses the use of permuted indexes for analysing thesauri and presents some of the results of such analyses.

ATHERTON, PAULINE, *and others*
Evaluation of the retrieval of nuclear science document references using the Universal Decimal Classification as the indexing language for a computer based system, by Pauline Atherton, Donald W. King [and] Robert R Freeman. [New York], American Institute of Physics, 1968.
33, [9] p. (Report no. AIP/UDC—8.)

MEYNEN, E.
Documentatio Geographica und die Verwendung der DK bei Registerherstellung.
DK—Mitteilungen, vol.13, no.4, July 1968, p.13–14.
Using UDC for automatic data processing in compiling the index to *Documentatio Geographica*.

CORNWALL, G. ST. C., *and others*
British Technology Index as a basis for the subject catalogue in the Natural Rubber Producers' Research Association.
Catalogue and Index, no.12, October 1968, p.8–10.

HEAPS, D. M., *and* HEAPS, J. S.
Computer retrieval of papers in acoustics [letter].
Journal of the Acoustical Society of America, vol.43, no.6, June 1968, p.1461–3.
Description of the system using 80-column punched cards to index papers on the subject.

BORKO, HAROLD, *and others*
On-line information retrieval using associative indexing. Santa Monica, Calif., Systems Development Corporation, 1968.
133 p. (AD 670 195.)

KRETSCHMER, FRITS, *and* FÖLLMER, JOHANNES
Permutiertes Register—das erste auf Robotron 300 hergestellte Informationsmittee der DDR.
ZIID Zeitschrift, vol.15, no.5, October 1968, p.210–14.
Describes the permuted index of the Dresden Institute of Data Processing with reference to the Robotron 300 project for information and documentation.

BAGLEY, D. E.
Indexing for information retrieval.
In BURKETT, JACK, *ed.*
Trends in special librarianship, 1968, p.21–33.

SURVEY of the use of source abstracts and source index terms in a selected group of engineering journals. Burlington, Mass., Information Management Inc., 1968.
Var. pag. (PB 179 048.)

ALTMANN, BERTHOLD, *and* RIESSLER, WALTER A.
Automation of the ABC system. Part I Linguistic problems and outline of a prototype test. Part II Prototype test and processing for second generation model. Part III Appendixes charts and illustrations. Washington, D.C., U.S. Army Material Command, Harry Diamond Laboratories, 1968.
3 vols. (TR 1392)

RUBINOFF, M., *and others*
Easy English, a language for information retrieval through remote typewriter console.
Communications—ACM, vol.11, no.10, October 1968, p.693–6.
Computer language developed by Moore School of Electrical Engineering.

HAYS, DAVID G., *and others*
Computational linguistics: bibliography, 1967; memorandum RM–5733–PR. Santa Monica, Calif., Rand Corporation, July 1968.
63 p. (AD 673 474.)
664 items including reports, books and articles from 37 specified journals. The unannotated bibliography is arranged systematically, and there are author and organization indexes.

HAZELL, W.
Prefer the concrete word to the abstract.
Technical Publications, vol.5, no.5, January 1969, p.201–6.
Discusses the use of abstract terms in writing and their replacement by concrete nouns.

THE TRANSLATING scene
The Incorporated Linguist, vol.7, no.2, April 1968, p.25–34.
Contents: The translation scene in the United States, by K. Gingold, p.26–7; The translation scene in the Netherlands translated by Ian F. Finlay, p.28–9. Ubersetzen und Dolmetschen in Österreich, by L. Walentik, p.30–1; The translation scene in Sweden, by H. Nordback-Linder, p.32–3; The translation scene in Denmark, by Aksel A. Anslev, p.33; Translations and translators in Romania, by Radu Lupan, p.34.
A survey of the state of translating in various countries with emphasis on the increased status of the translators.

Information Processing and Systems

SWANSON, ROWENA W.
Information an exploitable commodity: Arlington, Va., United States Air Force. Air Office of Scientific Research and office of Aerospace Research, 1968.
65 p., illus., diagrs. (AFOSR 68—0652.)
Paper presented at the Fourth National Congress on Data Processing, Jerusalem, 8–9 April 1968.

HOUGHTON, BERNARD, *ed.*
Computer based information retrieval systems. London, Bingley, 1968.
136 p.
Papers presented at a course held at the School of Librarianship and Information Work, Liverpool College of Commerce, in April 1968.

CHEMICAL SOCIETY. Research Unit in Information Dissemination and Retrieval.
Search manual; 1968 ed. Nottingham, the Unit, 1968.
48 p.

WILSON, THOMAS D., *and* STEPHENSON, JAMES
Dissemination of information: an examination guidebook; 2nd ed. rev. London, Clive Bingley, 1969.
86 p. (Examination Guide Series.)

CORBETT, L.
Using commercially available literature tapes for a current awareness service.
Information Scientist, vol.2, no.3, November 1968, p.83–102
The need for, and characteristics of, SDI. Details of problems encountered in providing an SDI service based on *Chemical Titles* at Aldermaston, with particular reference to program limitations. Data on operating costs and user assessments given.

GALLAGHER, P. J.
Some experiences with selective dissemination on [sic] information.
Information Scientist, vol.2, no.3, November 1968, p.103–6.
Presented at a meeting of the Institute, 14th March 1968.
Discusses SDI system using *Chemical Titles* tapes at Shell Research Ltd. and typical operational faults of the tapes; originally run on IBM 1460 computer, to be transferred to Univac 9300.

DEVELOPMENT and demonstration of information system data schedules. Burlington, Mass., Information Management Inc., 1968.
176 p. (PB 178 527.)
3 microfiches.

NEUMANN, KLAUS
Gedanken zur Modellierung von Systemen der Information uber Wissenschaft und Technik.
ZIID Zeitschrift, vol.15, no.5, October 1968, p.201–5.
Describes the methods of conceiving an information system using the 'Informations system Wissenschaft und Technik' (IWT) as an example.

SHOWALTER, A. KENNETH
Test OSIRIS (On-line Search Information Retrieval Information Storage). Washington, D.C., Naval Material Command, 1968.
10 p., illus. (AD 672 321.)

REIHLEM, ROLAND
Berichtswesen und Information—Wiedergewinnung, mit Hilfe eines IBM Systems/360 Modell 40.
IBM Nachrichten, vol.18, no.191, October 1968, p.352–6.
Describes a programmed system of document retrieval using a keyword index.

O'CONNOR, JOHN
Retrieval of answer-providing documents.
American Documentation, vol.19, no.4, October 1968, p.381–6.

GROVER, N. B., *and others*
Computer retrieval of mechanically indexed articles, by N B Grover, B. Arbel, J. Gross and C Keren.
Methods of Information in Medicine, vol.7, no.4, October 1968, p.224–6.
User interest profiles are matched against titles and the computer retrieval ratio is found to be 89 per cent compared to 60 per cent for manual search. Computer relevance ratio is over 99 per cent.

A DDC BIBLIOGRAPHY on cost/benefits of technical information services and technology transfer. Alexandria, Va., Defense Documentation Centre, 1968.
Var. pag. (AD 672 500.)

URBACH, PETER F., *and others*
Report of the Ad Hoc Committee on Patent Documentation. Washington, D.C., The Committee, May 1968.
75 p. (PB 178 691.)

ROBINSON, THOMAS W.
Report on a conference on Chinese data retrieval. Santa Monica, Calif., Rand Corporation, 1968.
47 p. (AD 669 339.)
1 microfiche.

KAYE, MICHAEL, *and* NYEKY, R.
A reprint retrieval system for nephrology using Termatrex cards.
Canadian Medical Association Journal, vol.98, no. 16, 20 April 1968, p.781–4.
A literature-retrieval system operating now for two years at Montreal General Hospital. It is applicable to individual specialities and groups.

LUTZ, THEO, *and* KLIMESCH, HERBERT
'Management Information Systems' (MIS): die Datenbank und ihre Probleme.
IBM Nachrichten, vol.18, no.192, December 1968, p.457–64.
The second article in a series about MIS. The data bank and problems are dealt with.

REINECKE, JOHN P.
Information retrieval and film filing system for biological research.
Texas Reports in Biology and Medicine, vol.25, no.3, Fall 1968, p.334–41.
A hand-operated data retrieval system using punched cards for all forms of still and movie films.

SCHOLZ, R. G., *and others*
Feasibility study of the development of a specialized computer system of organic chemical signatures of spectral data. Chicago, Ill., IIT Research Institute, 1968.
185 p. (PB 178 354.)
5 microfiches.

Communication and Knowledge

PARKER, EDWIN B., *and others*
Communication and research productivity in an interdisciplinary behavioral science research area. [Stanford, Calif.], Stanford University. Institute for Communication Research, 1968.
85 p.

THE DYNAMICS of information flow:
Recommendations to improve the flow of information within and among federal, state and local governments. Washington, D.C., Intergovernmental Task Force on Information Systems, 1968.
31 p. (PB 178 307.)

HYDE, GORDON
Scientists informed.
Nature, vol.220, no.5171, December 1968, p.1056.
Letter, contending that an information retrieval computer could be brought to the prototype phase within 1 year, at cost of about £100,000.

HOW to ring up your computer on STD.
Office Equipment News, December 1968, p.15–16.
Description of the five telephone circuit data communication links shortly to come into operation.

Professional Activity

*EUROPEAN library directory: a geographical and bibliographical guide, compiled by Richard C. Lewanski. Florence, Leo S. Olschki, 1968.
774 p.

BURKETT, JACK
Special libraries and documentation centres in the Netherlands. Oxford, Pergamon, 1968.
103 p., illus., (International Series of Monographs in Library and Information Science 1. vol.9.)

ORNE, JERROLD
Current approaches to standards for information science and library problem areas.
California Librarian, vol.29, no.4, October 1968, p.256–62.
Sketches the development of library standards through the work of the US American Standards Institute and the Task Group for Interchange of Scientific and Technical Information in Machine Language.

INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS, *and* INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
The international standardization of library statistics. a progress report. London, the Federation; the Organization, 1968. 216 p.

WOOD, RAYMUND F.
Do we need a new terminology for librarianship?
California Librarian, vol.29, no.4, October 1968, p.274–8.
Compares the status of librarianship with that of other professions; suggests new titles for job descriptions in order to raise status.

LIBRARIANSHIP
In NEAL, K. W.
Teaching method in further education, 1968. p.62.

MEWS, HAZEL
Library instruction to students at the University of Reading.
Education Libraries Bulletin, vol.32, Summer 1968,.p.24–34.
Historical description of the instruction course for first-year undergraduates. There is an appendix with some examples of library instruction exercises.

WILCOX, BRIAN
The program: a means of increasing the efficiency of the text-book.
Library Association Record, vol.70, no.12, December 1968, p.317–20.
Paper at the DES Course on Education for Librarianship, Oxford, July 1968. Possibilities of using programmed learning for teaching librarianship skills are outlined.

AMERICAN INSTITUTE OF PHYSICS. Information Division
Bibliography of information division reports. New York, the Institute, 1968. 4 p. (ID 68–9.)

LEWIS, P. R.
Research performance in librarianship.
In LIBRARY ASSOCIATION R.S. and I. Section Proceedings . . ., 1968.
p.21–33, Discussion p.33–6.

SZENTMIHÁLYI, JANOS
A tudományos tájékoztatás elméletének kialakulása.
Tudományos és Müszaki Tájékoztatás, vol.15, no.8–9, August–September 1968, p.597–617.
Development of the theory of scientific information, now called 'informatics'.

VICENTINI, A. L. C.
Informatika.
Tudományos és Muszaki Tájékoztatás, vol.15, no.8–9, August–September 1968, p.589–94.
Definition of informatics and statement of the FID proposal to create a new UDC class 04/05 to assimilate the existing 002 Documentation and 02 Librarianship.

DYSON, G. MALCOLM
The Royal Society meeting for discussion on scientific information.
Chemistry and Industry, 23 November 1968, p.1632–4.
Several current information activities were described, and the present position was summarized under the headings: Hardware, Software, Systems Design, Input. Future requirements were defined as the provision of ample input coverage and the integration of systems.

BIBLIOGRAPHIE und Dokumentation.
In BUSSE, GISELA VON
Das Bibliothekswesen der Bundesrepublik Deutschland, 1968. p.221–36.

DEMBOWSKA, MARIA
Documentation and scientific information: outline of problems and trends. Translated from the Polish for the National Science Foundation. Warsaw, Poland, Central Institute for Scientific, Technical and Economic Information. Scientific Publications foreign co-operation center, 1968. 153 p., bibliog. (TT 67 — 56000.)

SARACEVIC, TEFKO, *and* REES, ALAN H.
The impact of information science on library practice.
Library Journal, vol.93, no.19, 1 November 1968, p.4097–101.
Examines the relationship between information science and librarianship and the lead given by information science to library practice.

STEINBUCH, KARL
Zurunftsaufgaben der Informationstechnik im Hinblick auf das Bibliothekswesen.
Zeitschrift für Bibliothekswesen und Bibliographie, vol.15, no.5/6, 1968, p.291–306.
The future of information theory as far as it concerns librarianship.

FOSKETT, D. J.
The intellectual and social challenge of the library service.
Library Association Record, vol.70, no.12, December 1968, p.305–9.
Paper at the Conference for Teachers of Librarianship organized by DES, Oxford, July 1968.

[BOLINO, AUGUST C.]
Trends in library manpower.
Wilson Library Bulletin, vol.43, no.3, November 1968, p.269–78.
Summarizes some important trends in staff requirement as noted in research done by the Maryland University School of Library and Information Services, Manpower Project.

RAYWARD, W. BOYD
Paul Otlet: a centennial tribute.
International Associations, no.11, November 1968, p.755–8.

RANGANATHAN, S. R.
Emergence of library profession. Musings on library service 1.
Library Herald, vol.9, no.4, January 1967–8, p.265–70.

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TECHNICAL SWEDISH, DANISH, NORWEGIAN translated by J T. Craddock, B COM, FIL, Ekard, Ray Park Avenue, Maidenhead, Berks. Maidenhead 24931.

RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineering. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

WILFRED E. GOODAY, ARSM, DIC, C.ENG, MIMM, FIL. Member of Translators' Guild, Romanian and French. 161 Rivermead Court, London SW6. RENown 1912.

MEDICAL PHARMACEUTICAL, BIOLOGICAL translations from French, Romanian and Portuguese into English and from English into French and Romanian. Dr J. Jacobson, 94 Temple Fortune Lane, NW11. 01-455 1010.

TECHNICAL TRANSLATIONS from Russian, German and Polish into English B. Klipstein, B SC(HONS), 1 Glenview Grove, Shipley, Yorkshire. Tel. Shipley 58215.

TECHNICAL AND COMMERCIAL translations from English into Russian. Mrs O. Linsley, 31 Parke Road, Barnes, London SW13. Tel. 01-748 8822.

TECHNICAL TRANSLATIONS from Japanese into English. R. A. Scutt, BA, 48 Somerset Avenue, West Wimbledon, London SW20. Telephone WIMbledon 1713 (01-946 1713).

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TECHNICAL OR COMMERCIAL translations into/from English, German, Dutch and French. A. M. H. Speller, FIL, NGV, 6 Lakeside, West Ealing, London W13. Tel. 01-998 1045.

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Volume 21 March 1969 Number 3

ASLIB CALENDAR 1969

April

THU.10 – SAT.12.	Northern and Midland Branches joint conference. Oxford.
FRI.11 – SUN.13.	Aeronautical Group annual conference.
TUE.15 – THU.17.	Chemical Group Conference: Commercial and marketing information.
WED.23.	Third Aslib Annual Lecture. Expert and layman in contemporary society; problems of function and communication, by the Baroness Wootton of Abinger.
TUE.29.	Transport Group annual general meeting.

May

THU.15.	Engineering Group conference. Birmingham.
WED.28.	Evening Meeting at Aslib. Library services in Czechoslovakia, by G. H. Wright. 5 for 5.30 p.m.

June

TUE.17 – THU.19.	Polymer Technology course, Loughborough.

September

SUN.21.	43rd Annual Conference, Coventry.

Electronics Group Conference

The 11th Electronics Group Annual Conference will be held from Friday 27th to Sunday 29th June, at the Overcliffe Hotel, Westcliff-on-Sea. This hotel is pleasantly situated on the sea-front, two minutes from Westcliff Station, and there are frequent trains from Fenchurch Street, the journey taking forty-seven minutes.

The conference fee is £10, but this is reduced to £9 10s for fees paid by 29th June. The programme consists of a paper on Cost Effectiveness in Library Management, a progress report on the work of Inspec (Information Service in Physics, Electrotechnology and Control), a symposium on Services available to Industrial Libraries from the Ministry of Technology Libraries and a paper on the BSI's Library and Information Service. There are two technical papers, one on Railway Electronics, which will deal not only with developments in signalling but on other aspects of train control, and one on Superconductivity.

The Annual General Meeting of the Group is as usual on the Saturday afternoon.

Chemical Group Course—Basic Chemistry

Following the success of similar courses held in 1966 and 1967, the Chemical Group has arranged a two-day course on 'Chemistry for non-Chemists'. This has been organized in conjunction with Dr L. C. Roselaar at the Borough Polytechnic.

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Industrial organic chemistry;
Chemical terminology and sources of information.

The course will be held at the Borough Polytechnic, London, on Thursday and Friday 29th and 30th May 1969, from 9.30 a.m. to 5 p.m. each day. Its object is to provide librarians and information officers with background information on chemistry and chemical processes.

The fee for the course will be £5, which includes lunch, and coffee and tea during the morning and afternoon breaks, for both days.

Applications should be made to Dr H. C. Evans, Education Officer, ASLIB Chemical Group, Shell Research Ltd, Carrington Plastics Laboratory, Urmston, Manchester M31 4AJ.

Progress at BSI with the English Full Edition of the UDC

Recognizing the world need for a complete version of the UDC in English, the British Standards Institution has set itself the target of publishing before the beginning of 1970 those parts of the English Full Edition (issued as British Standard 1000) which have so far not appeared.

In order that this objective shall be achieved with the minimum of delay, fairly small discrete sections of the schedules, with their indexes, will be published as and when they become available instead of forming parts of larger homogeneous units. This practice will result in about 100 separate parts of BS 1000, of which twenty-four have now been issued (list A below), fourteen are at the printing stage (lists B and C below) and four have been checked by a BSI Panel or individual expert (list D below). Of the remainder, about forty sections are currently being checked by BSI Panels or individual experts, twelve are about to be considered by newly formed BSI Panels and work will shortly start on the other six.

The following statement lists the sections which have been published in the past year or approved for publication.

A. Sections published since January 1968

UDC 611	Anatomy.
UDC 612	Physiology.
UDC 613	Hygiene.
UDC 615	Pharmaceutics, therapeutics, toxicology.
UDC 617	Orthopaedics, surgery, ophthalmology.
UDC 618	Gynaecology, obstetrics.
UDC 624	Civil and structural engineering in general.
UDC 628	Public health engineering. Water sanitation. Illuminating engineering.
UDC 65/651 + 657/659	Industrial and business management and organization.
UDC 656/656.7	Transport services. Traffic organization and control.
UDC 681.3	Data processing machines, etc.
UDC 684	Furniture and allied trades.
UDC 688/689	Fancy goods, toys, hobbies.
UDC 73/76	Fine and applied arts.
UDC 77	Photography.

B Sections which have been page-proofed

UDC 159.9	Psychology.
UDC 614	Public health and safety.
UDC 629	Transport engineering.

C. Sections which have been sent for page-proofing

UDC 1 (except 159 9)	Philosophy.
UDC 3/308	Sociology.
UDC 3/330	Economics.
UDC 332	Finance.
UDC 333	Land and property.
UDC 334	Co-operation.
UDC 335	Socialism.
UDC 337	Customs.
UDC 338	Production.
UDC 38/382	Commerce. Trade.
UDC 654	Telecommunication.

D. Sections which have been checked by a BSI Panel or an individual expert and sent for indexing or have been indexed.

UDC 616	Pathology.
UDC 625	Railway and highway engineering.
UDC 677	Textiles (already indexed).
UDC 7/72	Architecture (already indexed).

Mr A. Armstrong

The sudden death of Archie Armstrong on 5th February, at the age of 48, came as a considerable shock to his many friends in Aslib. He began his career in St Helens Public Library in 1937, moving to Liverpool in 1949 and becoming Deputy Reference Librarian in 1951. He joined the staff of the UKAEA Reactor Group, Risley, as Senior Information Officer, in 1954 when Risley was still a part of the Ministry of Supply. He participated, as Information Officer, in a number of major Atomic Energy Exhibitions in Geneva, Tokyo and Mexico City and played an important part in bringing British nuclear technology to the attention of other countries.

He was a member of Aslib Council from 1966 onwards and served on the International Relations Committee in 1966 and 1968. He played an active part in the Atomic Energy Branch of the Institution of Professional Civil Servants and was Chairman of the Library Staffs Group. His death, at such an early age, is a great loss to Aslib and to the profession generally.

World Textile Abstracts

Textile Abstracts, which has been produced for many years by the Textile Institute in Manchester, ceased publication at the end of 1968. It has been superseded by *World Textile Abstracts* which is produced by five textile research associations and published by the Shirley Institute (Didsbury, Manchester). This new periodical (vol. 1, no. 1, 15 Jan. 1969) appears twice a month and will provide a comprehensive service for the science and technology of textiles and related materials—some eight hundred periodicals in addition to reports, patents, books, etc., are being covered.

In addition to these published abstracts the Shirley Institute is developing a textile information service based on computer-storage of the references and appropriate keywords assigned from an international thesaurus (compiled by Prof. Backer at the Massachusetts Institute of Technology). In this way it is hoped that the Institute will become an international centre for information retrieval for the literature of textiles. The computer base will also enable cumulated author and subject indexes to be published promptly and more frequently than once a year.

Chemical Literature

The American Chemical Society Division of Chemical Literature announces the availability of an *Index to papers delivered before the Division of Chemical Literature, 1943–1964*. Compiled by G. F. Lewenz and Judith A. Feltham, the *Index* lists all the papers presented before the Division from its beginning as a Section of the Division of Chemical Education in 1943 to and including its fall meeting of 1964.

The *Index* may be purchased for one dollar from the Chairman of the Photocopy Service, Dr William B Wheatley, Bristol Laboratories, Inc., PO Box 657, Syracuse, NY 13201.

Aeronautical Group

The eighteenth annual conference of the Aeronautical Group will be held from Friday 11th to Sunday 13th April at the College of Aeronautics, Cranfield

Institute of Technology, Bedfordshire. The speakers will include Mr D. Kennington of English Electric on product information services; Mr J. W. R. Taylor on the compilation of *Jane's All the world's aircraft*; Mr J. M. Bruce of the RAF Museum on A historian's view of aviation history; Mr R. J. N. Offer of Rolls-Royce on computer-aided design; and Mr John Martyn and Mr Alan Gilchrist of the Aslib Research Department will speak about certain aspects of information handling systems.

The conference fee is £9 10*s*.

Further details are available from the conference secretary, Mr E. J. MacAdam, Deputy Librarian, College of Aeronautics, Cranfield, Beds.

Midlands Branch

An innovation in the Midlands Branch programme was the 'Younger members' evening' held at the Arden Hotel, Birmingham, on 14th January, under the chairmanship of R. Haynes (RAPRA). In an effort to encourage younger members into the activities of Aslib, four younger members were asked to speak on how their jobs fitted into the work of their organization. Miss M. Y. Scott (IMI Ltd) spoke on the role of the Research and Development Department Library at IMI. Miss J. Young (Courtaulds Ltd) described the use of patents in the interests of Courtaulds. Mrs S. M. Stafford (Coventry Reference Library) spoke on aspects special to reference libraries and Coventry in particular, including the work of CADIG, and Miss R. Elliott (RAPRA) described the literature bulletin and current awareness service at RAPRA. A successful experiment encouraged by the presence of the Director, Mr Leslie Wilson.

Technical-Economic Information

The Institute for Technical and Scientific Information of the Ministry of Metallurgy and Machine Industry, Budapest, is holding a Conference on Co-operation in Scientific Technical-Economic Information at the Hungarian Academy of Science from Wednesday 25th to Friday 27th June.

Speakers will include well-known Hungarian and foreign experts. The official languages of the conference will be Hungarian, German and Russian.

Further information may be obtained from the Conference Organization Committee, Budapest V, Arany Janos u. 24, Hungary.

Handlist of basic reference material for librarians and information officers in electrical and electronic engineering

A fifth edition of this *Handlist*, compiled by Ellen M. Codlin and R. S. Lawrie, is now on sale, price 25*s* (15*s* to members of Aslib). Orders should be addressed to Mr R. S. Lawrie, Hon. Treasurer, Aslib Electronics Group, 2 Dashwood Close, Bracknell, Berkshire.

Pakistan Special Library Association

The formation of the Pakistan Special Library Association has been announced at the Bengali Academy, Dacca. Its membership includes librarians from Government, business, industrial, learned society and academic organizations and its aims are to promote the collection, preservation and dissemination of information in specialized fields and to improve conditions in special libraries.

Its chairman is Mr Shamsul Huq, Librarian, Bengali Academy, Dacca 2, East Pakistan.

International Food Documentation Service (IFIS)

The Commonwealth Agricultural Bureaux in collaboration with the American Institute of Food Technologists and the Institut fur Dokumentationswesen (Frankfurt/Main) has successfully launched IFIS with the publication in February of the first issue of the new monthly *Food science and technology abstracts.* This service aims at covering the world's literature on food for human consumption ('from farm gate to packaged product') by scanning primary periodicals (approximately 1,000), patents and books. Each issue is divided into eighteen subject groups (six aspects, e.g. food microbiology, food economics; twelve community groups, e.g. milk and dairying products, meat, poultry and game) with an author and a subject index.

The Commonwealth Bureau of Dairy Science and Technology is responsible for the publication (compilation and editing) and the printing is done by computer-aided typesetting by the Zentralstelle fur maschinelle Dokumentation, using the same methods as they have developed for the *Deutsche Bibliographie.*

The launching in less than two years of such a computer-controlled publication and the related information retrieval service, with the added complication of working across national boundaries, is a most creditable achievement. For documentation as a craft, IFIS has a double interest; its techniques for subject indexing and retrieval, and their implementation in a mechanized setting.

Aslib study for CAB

The Aslib Research Department has begun a twelve-month study of the Commonwealth Agricultural Bureaux. This organization consists of fourteen geographically separated centres of information and other work in the agricultural and biological sciences, and a headquarters and sales branch. The CAB publishes nineteen secondary journals which this year will contain over 100,000 English language abstracts of scientific papers written in forty different languages and selected from over 15,000 serial publications. The study will consist of an exploration of the extent to which the separate bureau systems can be co-ordinated, the extent to which their procedures can be fruitfully aided by mechanization, and the likely costs and benefits of any charges proposed.

BNB/MARC Project

From the beginning of February all books with Standard Book Numbers (75 per cent of the total intake at BNB) have been recorded in weekly batches (four hundred titles) on magnetic tapes in MARC II format. Copies of these tapes are being made available to about twenty test libraries (mainly university libraries) in three formats (800 bytes per inch, nine-track for users of IBM and System 4 computers; 556 b.p.i., seven-track for users of ICT 1900; 200 b.p.i., seven-track for users of KDF9).

These libraries will be in a position to study and use these records once basic user programs suitable for each system become available, hopefully within a short time.

BNB now produces master stencils for its card service from the MARC record by using a paper tape format to drive an electric typewriter.

Specialized Information Centres

OSTI-supported Specialized Information Centres have existed for up to four years, and an increasing amount of experience is being gained of the setting-up and development stages of such centres. At the same time there is a growing number of inquiries from research workers interested in setting up centres in other fields.

OSTI has negotiated a contract with Aslib to analyse the experience of existing centres by means of visits and a study of their reports, and to write a review, one purpose of which will be to enable an inquirer to decide whether OSTI's concept of a Specialized Information Centre is appropriate to their situation, which of the existing centres it would be most useful to visit, and to help him discuss their activities in an informed way. Each centre has had to take a number of decisions, for instance, on the type of literature to be collected, the methods of storage, indexing, and publication, and the communication channels by which users are to be reached. The review would suggest what information should be collected as a basis for such decisions, what decisions are available to choose between, what alternative methods are possible for implementing these decisions, and how the circumstances of each centre have influenced the choice made. The publication resulting should be of value both to information workers, including the staff of the centres, and to scientists with limited information experience involved in plans for similar centres in other fields.

British Standards on Microfilm (VSMF)

Information Handling Ltd, producer of VSMF (Visual Search Microfilm File) information systems, has announced the availability of its British Standards Microfilm File. The file, in cartridges of 16-mm roll film, for use with a reader/printer, was produced by agreement with the British Standards Institution and contains published standards relating to the engineering industries—electrical, electronics, mechanical, materials, aircraft, automobile, plus certain handbooks, special issues, procedures, codes of practice, abbreviations, definitions and conversion tables relative to the remainder of the system.

One cartridge contains the computer-prepared indexes of (*a*) subject and (*b*) standard number, and the other cartridges the standards themselves. From the index the user is referred to the appropriate cartridge and frame number. That cartridge, when inserted in the machine, exhibits the relevant standard specification and a positive copy can be printed from any page, for the user to take away. Each month, for eleven months, an addendum cartridge is issued, containing new and revised standards, and a new index cartridge is supplied, incorporating the amendments. After twelve months a completely new file is issued. Cartridges are available to suit the type of equipment specified by the user. The annual subscription is £200 to users of other VSMF information systems, £220 to others. Those who do not already possess a reader/printer can obtain a 3M machine, from Information Handling Ltd, for £200 per annum, plus £50 per annum for maintenance.

Full details are available from Information Handling Ltd, 19–27 South Street, Farnham, Surrey. Tel.: Farnham 3841.

Asian and Oceanian Regional Commission of FID

The International Federation for Documentation (FID) has established its second regional commission. This is an Asian and Oceanian Regional Commission (FID/CAO) which held its Inaugural Meeting after the 34th General Assembly of FID in The Hague in December. The President is Dr Shigenori Hamada, President of the Japan Information Centre of Science and Technology, which is to provide the Secretariat of the Commission. The purposes of the commission will be to spread knowledge about the FID in the region and to increase co-operation in documentation among the members of FID in the region:

i.e. Australia
Democratic People's Republic of Korea
India
Indonesia
Israel
Japan
Pakistan
Thailand
Turkey
USSR
Ceylon
Syrian Arab Republic.

At present there is only one other regional commission and this is in Latin America, known as FID/CLA: but others will be established as need and opportunity arise.

Income Tax Relief on Aslib Subscriptions

Personal members of Aslib may not be aware that they may claim income tax relief on their subscriptions to Aslib under Section 16 of the Finance Act, 1958. The circumstances under which personal members may claim relief are set out as follows:

'Commencing with the year to 5th April 1959, a member who is assessable to income tax under Schedule E in respect of the emoluments of an office or employment is entitled to a deduction from those emoluments of the whole of the annual subscription which is due and payable by him to the society in the income tax year provided that:

a. the subscription is defrayed out of the emoluments of the office or employment, *and*
b. the activities of the society so far as they are directed to all or any of the following objects—
  i. the advancement or spreading of knowledge (whether generally or among persons belonging to the same or similar professions or occupying the same or similar positions);
  ii. the maintenance or improvement of standards of conduct and competence among the members of any profession;
  iii. the indemnification or protection of members of any profession against claims in respect of liabilities incurred by them in the exercise of their profession;

are relevant to the office or employment, that is to say, the performance of the duties of the office or employment is directly affected by the knowledge concerned or involves the exercise of the profession concerned.

A member of the society who is entitled to the relief should apply to his tax office as soon as possible for form P358 on which to make a claim for the relief due to him.'

University of Surrey

Dr W. E. Batten has been appointed as representative of Aslib to membership of the Court of the University of Surrey, Guildford.

REVIEWS

DIRECTORY: serials in pure and applied science and economics published in Israel, 2nd ed. Tel-Aviv, Center of Scientific and Technological Information, 1968. 200 p.

The second edition of this *Directory* lists information relating to 477 serials in the widest sense that were current in 1966, the last edition appeared in 1963 when 210 periodicals were included. The subjects covered include medicine, architecture, town planning, statistics and management and all other branches of pure and applied science.

The details given for each publication include name and address of publisher, editor, 1966 volume number, frequency, price, and abstracting services in which the periodical is indexed. The *Directory* is in English and Hebrew and the language of the text of each periodical is noted.

WALFORD, A. J., *ed.* Guide to reference material. 2nd ed. v. 2. Philosophy and psychology, religion and social science, geography, biography and history. London, Library Association, 1968. £5.

Volume 2 of the second edition of the *Guide* covers the fields of philosophy and psychology, religion, social sciences, geography, biography and history. It is arranged by UDC and duplicate entries have been made for some books with subjects that fall in more than one section of the bibliography.

The volume gives main entries for about 3,300 items plus subsumed entries for at least a further 1,500. The items are well annotated and reviews of the publications are occasionally cited. Leading reviewing journals are included as well as some analytical entries for bibliographies which appear in periodicals or books. The editors state that the British slant of the contents in the *Guide* is less evident than in previous issues. The work maintains its high standard and it is hoped that volume 3, covering general works, language and literature, and fine arts, will appear in 1970 to complete the second edition.

HANNOVER. Technische Universitätsbibliothek. Zeitschriften-Verzeichnis. Hannover, 1968. 344 p.

This list of holdings of some 15,000 serials is divided into three parts: the main sequence in the alphabetical order of all titles excluding those published in Eastern Europe, the Eastern European serials in a combined order of transliterated Cyrillic and Latin alphabets, and a list of 280 cover-to-cover translated periodicals with a broad subject index.

Like the NLL, this Library is building up comprehensive collections of Russian and Japanese periodicals in science and technology. However, only periodicals older than ten years are available on loan, but photo-copies of single articles are supplied in the usual way.

PROGRAMMED INSTRUCTION IN CLASSIFICATION AND INDEXING

C. D. BATTY

College of Librarianship Wales

Paper presented at Evening Meeting, Wednesday 23rd October 1968

MANY early programs were designed to teach either routine operations that could be broken down into easily learned, consecutive steps, or elementary levels of academic subjects like mathematics, basic science or foreign languages. For a long time programmed instruction was not thought suitable for conceptual subjects at a more advanced level, but the appearance of programs to teach subjects like advanced mathematics or computer programming suggested that it was not so much a matter of suitable subjects as of methodology. This is not the place for an examination of conventional attitudes towards academic disciplines and their teaching, but it might be observed that programmed instruction offers yet another confirmation of the growing realization that difficult subjects can be explained in a simple and even enjoyable manner without in any way lowering the level or dignity of those subjects.

It was in this atmosphere that the Department of Information Retrieval Studies in the College of Librarianship Wales decided to see if certain areas of library and information science could be taught by programmed instruction. We had two aims: to see if programmed instruction was suitable at all for any areas of our professional disciplines; and to see if we could alleviate by its use the inevitable pressures on the timetable and the students' time.

We decided first to work in the area of classification and indexing, since this was the area we felt competent to handle, and because its fairly rigorous theoretical structure might lend itself to programmed treatment. We planned then to use our experience in this first stage to investigate other areas of library and information science to test their susceptibility to programmed methods. At the same time we kept in mind a third stage of ancillary areas like instruction in library use and in literature searching.

The first program was designed to teach first-year students the basic mechanics of number building in the Dewey Decimal Classification, 16th edition (DC16).[1] The students had already had a lecture on the history and theory of the scheme but no formal practical work with it and past experience showed that, since some of the time was taken up with following up points from the theory lecture, it was seldom possible to work more than about two dozen examples—not enough to give experience in practical classification and to illustrate the strength and weaknesses of the scheme in practice. It was felt that if the students could come to the practical sessions already able to use the scheme in a straightforward way, the two hours might be used to greater advantage.

The basis for the program was a list of twenty topics chosen to illustrate the basic variation of numbers in DC16, simple numbers, geographical subdivisions, the 'divide like' devices and the associated difficulties with each that arose with either ambiguity in the index or economies in the notation. This list was given to a test group chosen from male and female students with varying library experience or with none at all, and with varying formal educational qualifications. The intention was to eliminate topics which by some accident confused the student in an arbitrary and unnecessary way, and also to ensure that the topics increased in difficulty through the list. Above all, it was important to discover what mistakes were made, since these would help to decide what wrong answers were likely at any stage and therefore what remedial frames should be written.

The basic frames were then written—that is, the central thread of text which assumes all the right answers. This must explain the subject clearly, step by step, with neither ambiguity nor padding. The examples must illustrate just the point in hand and contain no hint of a point not yet explained, and the question must test principally the point just made; marginally it may reinforce a previous lesson, but it must never, never raise problems that have not yet been faced. This set of basic frames should also be tested to ensure that not too much time is spent on any one of them (which would show that it was too difficult) and to check that the right and wrong answers were given as well as the right proportion of wrong ones. Any difficulty or objection means that the frame must be rewritten or the question recast.

For the DC16 text the test and control groups each contained twenty-five students aged 18–24. These were mixed samples of students with previous library experience, and with no previous library experience but with an intensive theoretical and practical orientation conducted by the college in a ten-week course. None of them had any previous formal instruction in any classification scheme, but they had all had a course in the theory of classification. Testing was also carried out with groups of similar background and experience containing only postgraduate students aged 21–26.

The procedures of testing were fairly simple. In the preliminary stages of testing the program outline, students were instructed simply to work the problems without any help beyond the instruction. They had a pre-test of five simple problems of the kind to be explained and a post-test of five slightly more difficult problems. This stage of testing was diagnostic, intended to correct the outline program and to lead to the design of remedial branches.

The next stage is to write the remedial frames. Since by now the programmer knows the wrong answers, he hopes he knows why they are commonly given, so with an Olympian air of omniscience he says, 'You are wrong, and you are wrong because. . .'. He then tells them what they should have done, reinforces his explanation with examples and sets them a question exactly similar in form but different in context from the basic frame question. There are variations on this pattern of activity, but really all that is left then is to write the sadistic frames that say 'You have now made the same mistake twice. . .'.

In testing the full DC16 program, test groups were matched against control groups taught by normal, expository methods. Both kinds of group had pre- and post-tests and were given later tests for retention. Pre-testing showed that some students knew something about using DC16, some were confused and some just ignorant, and the two groups were about equally balanced.

Conventional instruction took two hours, and the group, led by the instructor, finished twenty examples similar to those used in the basic frames of the programmed text, at least eight of which had to be worked out on the board after over half of the group became confused over them. It is difficult to assess the accuracy of working in such a situation because of the constant help needed, but it is possible to estimate that less than a quarter of the group achieved more than a two-thirds accurate result without assistance other than the general remarks on the use of DC and about a quarter got fewer than five out of the twenty examples right.

Students working the full draft program were asked to record their answers, frame numbers (to indicate how many remedial branches were used) and the time taken for each frame. They were also asked to indicate if at any point a problem seemed to require an answer *not* supplied in the text. In assessing the achievements of this group it must be remembered that when the reader finishes the book he must have been successful in all twenty basic examples, even if after several tries, so it is difficult to count scores, and it is better to observe times. This is why a record was kept of the remedial frames used, and it showed that very few students strayed from the path more than twice. Since the examples were more or less the same as those used in the conventional test, this suggests that the step-by-step approach militates against mistakes being made at all.

It should be added that at one point in the program students spent twice as long as they did anywhere else, and on inspection it was discovered that the frame contained more than the simple topic it should have done, so it was split into two with the necessary remedial frames.

Let me interpolate here that in 1966-7 a new program was written for the DC 17th edition[2] and prepared and tested in the same way as the DC16 program. The DC17 text was tested with similar groups of professional and postgraduate students; this time, however, the groups contained an average of ten students. Much of the preliminary work on the text was based on the experience of the DC16 testing, since obviously much of the same material and approach was relevant, and this served as validation and reduced the need for early testing of the outline program.

It would be difficult here to analyse in detail the data collected from testing the DC16 and DC17 programs, and I would prefer to restrict quantitative judgement to a more generalized form.

The error rate for the DC16 program was and is about 10 per cent; that is, most students use two remedial branches out of a total of twenty basic frames. The error rate for the DC17 text is the same or a little higher, due probably to the rather more complex structure of the classification scheme; most students use four remedial branches out of a total of thirty-one basic frames. The average time for completing the DC16 program is about 75 minutes; the lowest time recorded was 43 minutes and the highest (apart from unfinished programs given up in despair) was 2½ hours. The DC17 program average is about 110 minutes and the highest (again apart from unfinished programs) was something more than 4 hours. Post-testing showed that the test groups were rather better at using DC (speed and accuracy) than the control groups, and a later test showed that their retention was better, and that they remembered more quickly when reminded of points on which they made mistakes.

What conclusions can be drawn from this? Apart from the encouraging similarity of the statistical data to the data recorded with other subjects, three general points emerged quite clearly. The first was that the instructor was able to spend all his time helping the slow and confused students, who were therefore only a part of the instructor's attention. The second was that there was time even during this test to talk about the scheme itself, and when the program was used outside the classroom, as it was designed to be used, with the tutor consulted only when necessary, then the whole two hours would be free to discuss the scheme profitably. The third (a personal observation) was that the criticism of programmed instruction as a gimmick was justified but if that gimmick encourages the student it is all to the good. The psychological encouragement of an unusual format and the hope that this is a painless and foolproof way of learning is no more an unfair advantage than a teacher who uses audio-visual aids, or has a good and effective manner.

The DC16 text was originally designed for first-year students with some theoretical knowledge of DC but no practical experience, but it has now been used as a refresher course for second-year students about to embark on a full course of practical classification and cataloguing with great success, and also as an *aide-mémoire* for finals students revising all aspects of DC. Even more so was this true of the text on Colon Classification[8] which was the second of these programmed texts to be written.

The CC text introduced problems of program design and a brief explanation of the design basis of the DC and CC programs may be of interest, since the very nature of classification and indexing itself led us to some new modifications of program construction technique.

There are basically two kinds of program: linear and branched, often combined in use. In a linear program the subject is broken down into almost irreducible fragments and these are fed to the student with a repetition of each tiny fragment in a slightly varied form with a very simple question to test his assimilation. The student is trusted to check himself if he makes a mistake and to go more slowly to learn the more effectively. This method of programmed instruction relies on the student achieving very nearly all correct answers and thus gaining confidence in himself and his knowledge. Unfortunately above a certain level of ability or previous knowledge even the fastest reader may become impatient with a 'cat sat on the mat' repetition.

In branching programs the instruction is often longer and more complex and the questions test a general understanding of the points involved. It is particularly suitable for teaching concepts of fairly complex mental operations, since these often require the support and corroboration of example and explanation along with the original point or instruction. With a larger body of instruction the possibility of error is greater and the kind of error likely to be made needs more than a re-reading of the original point; instead the reader must be given a particular explanation relevant to the kind of mistake he has made. The programmer must, therefore, predict the kind of wrong answers likely to arise from his instruction and test, and in a remedial frame tell the reader why he went wrong and what is the truth of the matter.

In the earliest branching programs the student was sent back to the original statement to try the original test again. (Fig. 1.)

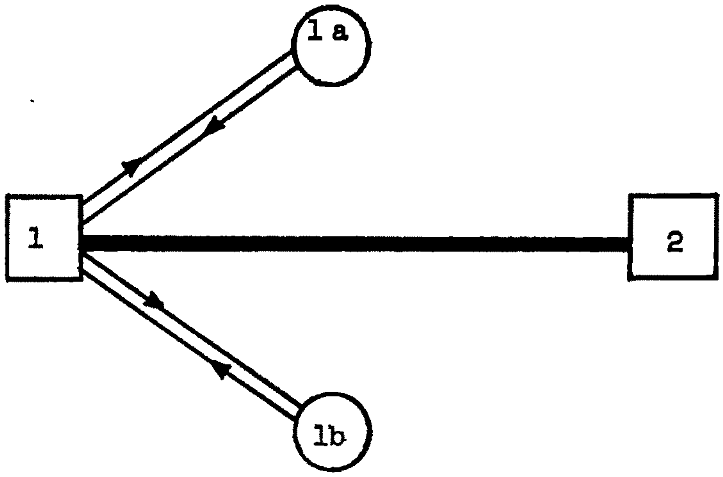

FIG. 1.

But a development of this gives the student a *similar* question after his wrong answer has been corrected, so that he may either join the main path again or again be given a corrective explanation. (Fig. 2.)

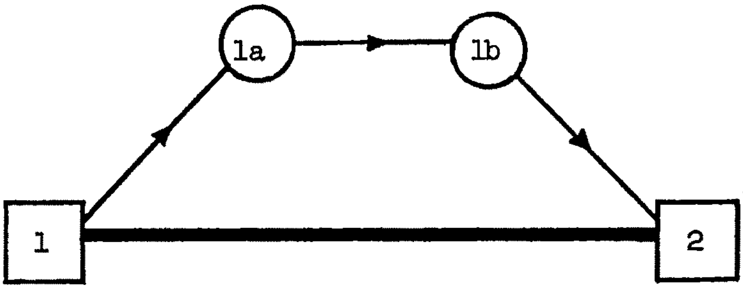

FIG. 2.

In our own experiments at CLW we took this development a stage further and used each remedial frame as a remedial frame for overcompensation by a student who had already made a mistake and was now thrown off balance. This gave us a much more economical structure and a greater range of possible correction for error, as shown in Figs. 3 and 4.

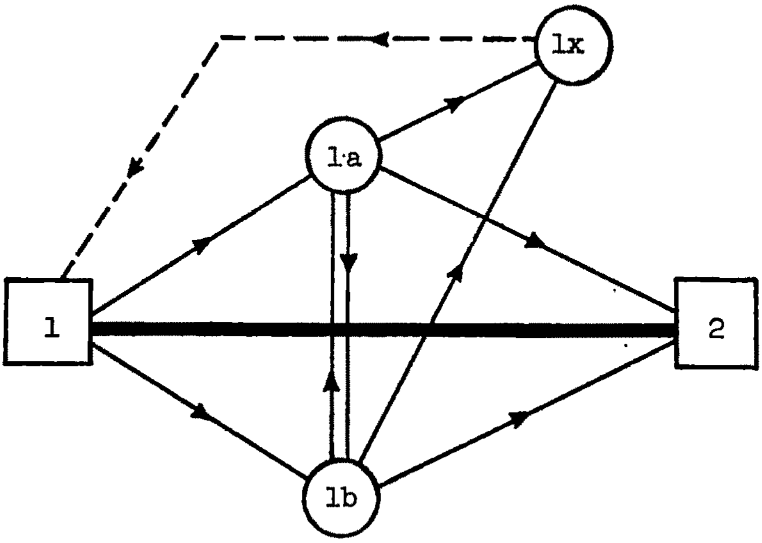

FIG. 3. Diagram of branching program.
(Batty, *An introduction to the Dewey Decimal Classification*: unit type A)

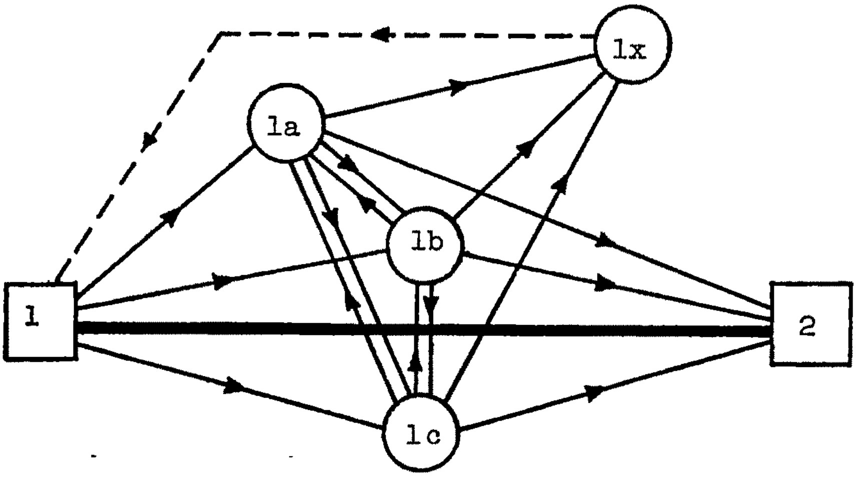

FIG. 4. Diagram of branching program.
(Batty, *An introduction to the Dewey Decimal Classification*: unit type B)

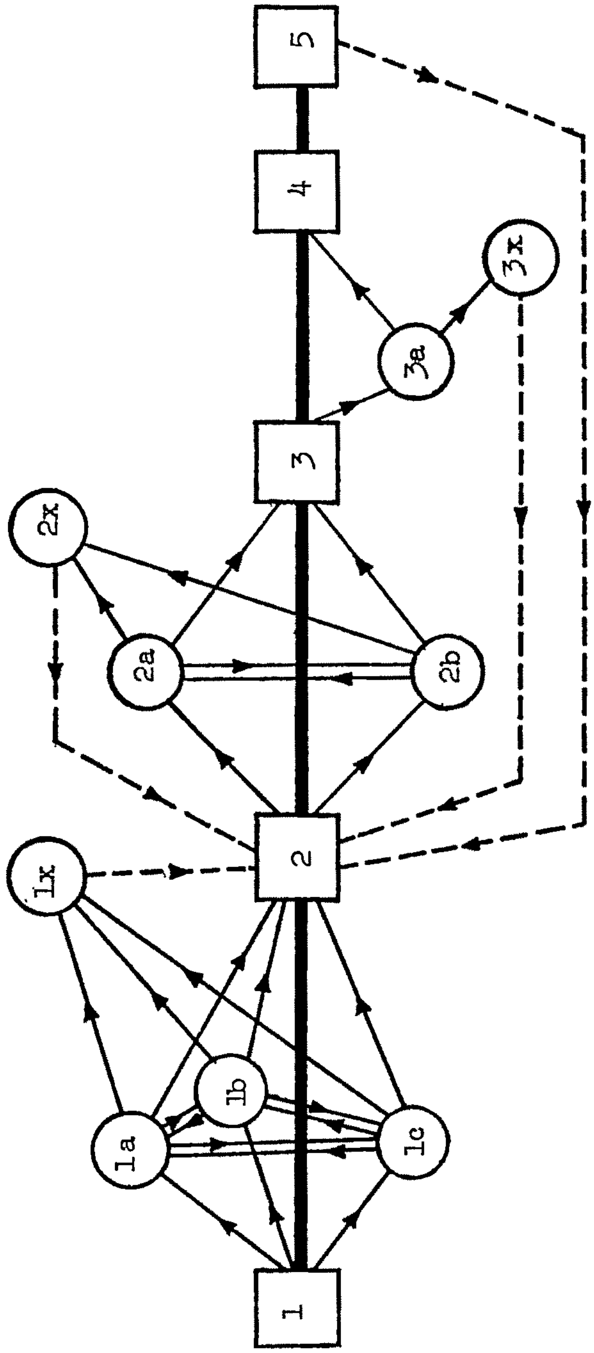

FIG. 5. Diagram of a section of a branching program.
(Batty, *An introduction to Colon Classification*)

Thus, a problem in DC using unit type A could pose a three-choice problem:

HISTORY OF ASTRONOMY 520.09
520.9
529

A reader choosing an answer with too many o's is led to frame 1(*a*), corrected, and offered:

ESSAYS ON PALAEONTOLOGY 560.04
560.4
564

and if this time he chooses the right answer (560.4) he is led to the next frame in the program, just as if he had chosen the right answer to the first problem.

The reader who chooses an answer to the first problem with too few o's (529) is led to a different remedial frame, 1(*b*) and again given a similar three-choice problem:

HISTORY OF METAPHYSICS 110.09
110.9
119

and again by choosing the right answer he will be led to the next main frame in the program.

If the reader, for either of the problems in the remedial frames, makes the same mistake he made the first time, clearly he needs to be referred back to the original lesson, and so the relevant choice in each of those remedial frames leads to frame 1(*x*) that announces simply that the reader has now made the same mistake twice and that he must re-read the original instruction. Clearly the same 'washback' frame can be used for both kinds of repeated error. For the reader who overcompensates for having included too many o's by now removing all of the o's, most programs would include a further remedial frame and test. In the DC program, however, the remedial frame for too few o's already existed as the other kind of error, and it was possible, by careful phrasing of the text, to make it suitable for both first and second (overcompensating) error. Similarly, the reverse direction could be used, and we found that two remedial frames and a 'washback' frame served for a very complex permutation of wrong paths. One of the advantages of this economy is that the whole program is physically shorter and contains a higher proportion of 'correct' frames—a considerable psychological advantage. At the same time the author is saved the effort of writing many remedial frames for what he hopes will be a small proportion of his readers.

Of course there is always the danger that the limited choice of error will allow a student to proceed by accident still misunderstanding in minor but essential points. But it is possible to test general concepts along with particular applications and the student can then always be sent back, not to the frame he has just come from but to an earlier one whose explanation he has misunderstood and whose test he has somehow evaded, as illustrated in Fig. 5.

In the CC programmed text we found some problems impossible for limited choice answers, since the class numbers were complex enough for an almost infinite variety of error. We were thus compelled to use self-checking ('Here is the answer: if yours is like this, go on; if not, go back') which is normally too permissive for certain success. The use of a special answer page, physically separated from the next piece of instruction, seemed to help by raising the slight physical barrier of page turning to compel the students to pause slightly and reflect.

We made a psychological error in the CC that we have resolved to avoid in the future. The complexity of the CC itself and of the problems, and the length of the program, meant that the optimum time for working through the text is three hours or more. This is far too long, and subsequent long programs have been broken up into sections that take about one hour on average.

Subsequent programs, on DC17, *Sears' List of Subject Headings*,[4] and basic cataloguing[5] have been used mainly to confirm the lessons learned from the earlier texts, but they have also provided opportunities for experimenting with new ideas. The CLW experience has now encouraged the preparation of similar programs, often in consultation with CLW.[6, 7]

I have tested these programs in America as well as in Great Britain and I have found that American graduate students with a grounding in classification theory and with minimal library experience show a slightly higher error rate and take correspondingly longer over the program. I attribute this difference between the two kinds of student to the difference in the general professional attitude in the two countries, that in Great Britain favours the classified catalogue and the use of classification as a tool for the analysis and description of information, and in America looks on classification only as a 'marking and parking' device. I realize that distinctions of this kind cannot consciously be made by the students under test, but they will and do affect almost any relevant professional knowledge or attitude they will have encountered.

We feel we are now ready to begin the second phase of our investigation, and to examine other areas in library and information science for their susceptibility to programmed instruction.[8] Certainly some areas will prove unresponsive, but it may be that, in addition to determining what areas will respond to programmed methods of instruction, an examination of the kind we intend will suggest other media that might be worth investigation.

REFERENCES

1 BATTY, C. D. *An introduction to the Dewey Decimal Classification.* Clive Bingley, 1965.
2 BATTY, C. D. *An introduction to the Dewey Decimal Classification, seventeenth edition.* Clive Bingley, 1967.
3 BATTY, C. D. *An introduction to Colon Classification.* Clive Bingley, 1966.
4 CORRIGAN, PHILIP. *An introduction to Sears' List of Subject Headings.* Clive Bingley, 1967.
5 (Unpublished.)
6 PERREAULT, J. M. *An introduction to the Universal Decimal Classification.* To be published by Clive Bingley, 1969.
7 WILSON, T. D. *An introduction to chain indexing.* To be published by Clive Bingley, 1969.
8 Already appearing is *Learn to use books and libraries,* by T. W. BURRELL. Clive Bingley, March 1969.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

*Items are available in the Aslib Library and may be borrowed unless marked * to indicate reference copies.*

User Studies

GUSHEE, DAVID E.
Reading behavior of chemists.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.191–4.
The use of chemical literature by chemists and the influence of their habits on its structure.

ENGELBERT, HEINZ
Probleme der Erforschung des Informations bedarfs der Gesellschaftswissenschaften.
ZIID Zeitschrift, vol.15, no.6, December 1968, p.243–8.
Discusses the problems of information needs in the Social Sciences. Conclusions drawn from user surveys in science and technology should be used in this field.

KNAPP, PATRICIA B.
The reading of college students.
The Library Quarterly, vol.38, no.4, October 1968, p.301–8.
Review of recent surveys and suggestions for future surveys.

Library Systems

TRUMPETER, MARGO
Non-librarians in the academic library.
College and Research Libraries, vol.29, no.6, November 1968, p.461–5.
A comparison of librarians and non-librarians.

WILLERS, UNO
Rationaliseringsinstrument med otillräckliga personalresurser?
Biblioteksbladet, vol.53, no.10, 1968, p.1217–20.
Insufficient economic resources for the Royal Library in Stockholm will handicap research, educational and academic studies.

RATCLIFFE, F. W.
Problems of open access in large academic libraries.
Libri, vol.18, no.2, 1968, p.95–111.
Includes origins of open access and experience at Manchester University.

BAKKEN, HALLVARD S.
Relations between central library and institutional libraries of Bergen University.
Libri, vol.18, no.2, 1968, p.125–30.
Library co-operation within the University of Bergen, Norway.

ZIMMERMAN, GERHARD
Probleme bei der Einbeziehung Wissenschaftlich-technischer Informationen in das einheitliche Informationssystem des Schwermaschinen- und Anlagenbaus.
ZIID Zeitschrift, vol.15, no.6, December 1968, p.238–42.
Describes the development of a combined management and industrial information service in an East German University.

ANDREWS, JOHN S.
Learned libraries in West Germany.
Journal of Librarianship, vol.1, no.1, January 1969, p.20–40.
Based on a 1967 study tour; the emphasis is on libraries in universities.

TELL, BJÖRN
Statsmakternas roll inom informationen—nationellt och internationellt.
Tidskrift for Dokumentation, vol.24, no.4, 1968, p.52–6.
Suggests a central national body to have responsibility for scientific and technical information services, and as a basis for an internationally co-ordinated information system.

SHEKHURIN, D. E.
Osnovnye puti sovershenstvovaniya deyatel'nosti mezhotraslevykh territorial'nykh informatsionnykh organov (TsBTI).
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.10, 1968, p.3–6.
Ways of improving the work of an interdisciplinary regional information centre (central bureau of technical information).

PIRÓG, WOJCIECH
Zadania sluzby informacji w realizacji programów rozwojowych kraju.
Aktualne Problemy Informacji i Dokumentacji, vol.13, no.5, 1968, p.1–4.
The role of the information service in implementing Poland's development programme.

CAMPBELL, H. C.
Canadian libraries. London, Clive Bingley, 1969.
90 p., bibliog. (Comparative Library Studies.)

WORMANN, CURT D.
Aspects of international library co-operation—historical and contemporary.
Library Quarterly, vol.70, no.4, October

1968, p.338–51.
Historical treatment. Includes discussion of IFLA and Unesco.

MIKHAILOV, O. A.
Unesco's documentation activities.
FID News Bulletin, vol.19, no.1, January 1969, p.7.
Summarizes activities of Unesco in field of documentation, its aims, programme for 1969–70 and co-operation with FID.

Administration and Management

LEIMKUHLER, FERDINAND F.
Systems analysis in libraries.
Los Angeles, California, University of California, Los Angeles, 1968.
17 p.

MORSE, PHILIP M.
Library effectiveness: a systems approach.
Cambridge, Mass., M.I.T. Press, 1968.
x, 207 p.

PROHL, PETER
Neubauten wissenschaftlicher Bibliotheken in der VR Polen.
Zentralblatt fur Bibliotheksmesen, vol.82, no.10, October 1968, p.601–12.
Report of a study tour of four new scientific libraries in Poland. Detailed descriptions with photographs and plans.

KALTSCHMIDT, WOLFGANG
Einige Gedanken zu Fuhrungsaufgaben im sozialistischen Bibliothekswesen.
Zentralblatt fur Bibliotheksmesen, vol.82, no.10, October 1968, p.598–601.
Discusses management duties in socialist libraries; in particular, library planning, training and education.

PUBLIC lending right
Bookseller, 21 December 1968, p.2030–2.
Statement by the Society of Authors.

TRUESWELL, RICHARD W.
Some circulation data from a research library.
College and Research Libraries, vol.29, no.6, November 1968, p.493–5.
Results of an analysis of monograph circulation at AF Cambridge Research Library over a six-month period.

RUNDELL, WALTER
Relations between historical researchers and custodians of source materials.
College and Research Libraries, vol.29, no.6, November 1968, p.466–76.
Report of a survey sponsored by the National Historical Publications Commission, 1965–7.

SNOW, D. C.
Technical information from patents.
Metals and Materials, vol.2, no.12, December 1968, p.353–6.
Introduction, by a Patent Office Examiner, to British patents, their classification and indexing.

Printing and Publishing

MICHAELSON, HERBERT B.
Achieving a more disciplined R and D literature.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.198–201.
Suggestions for improving journal papers include expanding and condensing sections of the text according to relative importance, author abstracts and the provision of more pertinent illustrations.

EMANS, ROBERT
Context clues as an aid to the reader.
Journal of Typographical Research, vol.11, no.4, October 1968, p.369–73.

MADDOX, JOHN
Journals and the literature explosion.
Nature, vol.221, no.5176, 11 January 1969, p.128–30.

FURTH, STEPHEN E.
Man-machine interaction in publishing technical literature.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.202–3.
Faster and more effective communication with on-line computer storage, and computerized publication through a variety of media.

SEYBOLD, JOHN W.
Esthetic values in computerized photocomposition.
Journal of Typographic Research, vol.11, no.4, October 1968, p.341–50.
Methods of achieving good quality composition in computerized typesetting.

HENDERSON, MADELINE M.
Critical reviews: introductory remarks.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.231.
The functions of critical reviews and problems in their preparation.

HERRING, CONYERS
Critical reviews: the user's point of view.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.232–6.
Curves show characteristics of published scientific information. Reviews are essential and suggestions are made on ways to make them more accessible and useful.

BERING, EDGAR A.
Critical reviews: the sponsor's point of view.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.236–8.
Selection, production and distribution of reviews including consideration of the prospective readers.

TOWNSEND, LEROY B.
Critical reviews: the author's point of view.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.239–41.
The steps, procedures and problems which

the author of a critical review should consider.

HART, HAROLD
Critical reviews: the editor's point of view. *Journal of Chemical Documentation,* vol.8, no.4, November 1968, p.241–4.
Use of reviews. How to select subject and author. Influences an editor can exert.

CLAPP, VERNER W.
The copyright dilemma: a librarian's view. *Library Quarterly,* vol.70, no.4, October 1968, p.352–87.
The law relating to library copying in the United States.

SCHULTE, RAINER
Die photographische Wiedergabe urheberrechtlich geschutzter Werke.
Nachrichten für Dokumentation, vol.19, no.6, December 1968, p.215–16.
The photographic reproduction of copyright works—Unesco committee recommendations.

WHITAKER, DAVID
Standard book numbering.
British Book News, January 1969, p.1–4.

SCHNEIDER, KLAUS
Standard – Serien – Nummern (SSN) zur Numerierung von Zeitschriften.
Nachrichten für Dokumentation, vol.19, no.6, December 1968, p.231–2.
Standard Serial Numbers (SSN) for the numbering of journals.

BOSSUNG, OTTO
Die Entwicklung eines internationalen Numierungssystems fur Patentanmeldungen und patentamtliche Publikationen.
Nachrichten für Dokumentation, vol.19, no.6, 1968, p.226–30.
The development of an international numbering system for patent applications and patent office publications.

ARMSTRONG, MARGARET
A checklist of fine trade bindings designed by Margaret Armstrong, compiled by Charles B. Gullans and John J. Espey. Los Angeles, Calif., University of California Library, 1968.
37 p., illus. (UCLA Library Occasional Papers no.16.)

Reprography

DOCUMENT reproduction survey, November 1968; editor: T. Hampshire.
FID News Bulletin, vol.18, no.12, 15th December 1968, p.114–17.
Summary of new reprographic equipment with details of operations, costs and addresses of manufacturers.

*FRANK, OTTO
Reprographische Ausrustungen. Materialen, Gerate und Maschinen zum Kopieren und Vervielfältigen. Stuttgart, Dorotheen-Verlag, 1968.
248 p., illus. (Handbuch der Reprographie Band 4.)
Supplementary volume to the first three in the series; an illustrated survey of copying and duplication apparatus.

NATIONAL REPROGRAPHIC CENTRE FOR DOCUMENTATION
Micropublishing for learned societies. Hatfield, Herts., HERTIS, 1968.
36 p., illus.

BRYAN, HARRISON, *and* SLIGHT, OWEN E.
A cataloguing drive using the polaroid CU5 close-up camera.
Australian Library Journal, vol.17, no.9, October 1968, p.311–21.
Cataloguing at the University of Sydney Library, using photographed LC/NUC entries.

KOLLOQUIUM: Probleme der Mikrofilm-und Vervielfaltigungstechnik im Informationswesen der Deutschen Demokratischen Republik. Berlin, Zentralinstitut für Information und Dokumentation, 1968.
270 p., illus. (ZIID-Schriftenreihe 20.)

CROW, JAMES E.
Microforms and technical information.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.204–7.
Describes a system based on the production of original microfiche, using in-house equipment, for over 50,000 internal technical documents.

DAS COPYLINE/Rapidoprint—programm der Agfa-Gevaert AG.
Reprographie, vol.8, no.12, December 1968, p.307–10.

MILLS, H.
Electrostatic print-out from microfilm.
NRCd Bulletin, vol.2, no.1, 1968, p.5–12.

'ARCHFICHE'—an evaluation.
NRCd Bulletin, vol.2, no.1, 1968, p.17–30.
Method of producing updateable microfiche masters, using 16-mm rollfilm strips in a transparent envelope.

NELSON, CARL E.
Modern drafting techniques for quality microreproductions. Annapolis, Md, National Microfilm Association, 1968.
38 p., illus. (NMA Informational Monograph, no.3.)

DEUTSCHE Normen: Begriffe der Reprographie.
Reprographie, vol.8, no.12, December 1968, p.315–22.
Standard for reprographic terminology.

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
Microcopy: measurement of the screen luminance of microfilm readers. [Geneva], the Organization, 1968.
7 p. (ISO Recommendation R 782.)

The ADVANTAGES of using a service bureau.
Reproduction, vol 6, no.1, January 1969, p.6–8.
The use of a commercial bureau for microfilming and small offset printing.

COENENBERG, RICHARD
Synergizing reference service in the San Francisco Bay region.
ALA Bulletin, vol.62, no.11, December 1968, p.1379–84.
BARC (Bay Area Reference Center) provides reference service, with aid of a facsimile network, to seventeen member libraries.

KUBÍN, BORIS
Perspektivy zavádení spojových prostredků do síte vedeckých, technických a ekonomických informací - prognóza do roku 1980.
Metodika a Technika Informací, nos.7–8, 1968, p.61–7.
Introduction of telecommunications into the information network; prognosis till 1980.

Subject Organization

MASON, D.
The organisation of special libraries in the United Kingdom.
Libri, vol.18, no.2, 1968, p.141–8.
Describes special libraries in general, their associations, their staffing, and gives some examples.

RECOMMENDED basic statistical sources for community use.
Library Association Record, vol.70, no.11, November 1968, p.289–91.
Lists sixty books with some annotations.

*FRAUENDORFER, SIGMUND VON, *ed.*
Survey of abstracting services and current bibliographical tools in agriculture, forestry, fisheries, nutrition, veterinary medicine and related subjects. Munich, BLV Verlagsgesellschaft, 1969.
192 p.

CHAKRABORTY, AJOY RANJAN
A comparative study of geological bibliographies.
IASLIC Bulletin, vol.13, no.2, June 1968, p.164–73.
Discusses the four major services: Bibliography and Index of Geology Exclusive of North America, Referativnyi Zhurnal, Bulletin Signaletique and Zentralblatt fur Geologie und Paleontologie.

SHARMA, JAGDISH SARAN
Indexing and abstracting services in India.
Indian Librarian, vol.23, no.2, September 1968, p.110–25.
Paper read at 7th IASLIC Conference, Delhi University, December 1967. Brief history, with chronological list, and future plans.

BIOLOGICAL COUNCIL
Abbreviated titles of biological journals compiled by P. C. Williams, 3rd ed. London the Council, 1968.
viii, 47 p.
Contains abbreviations for some 1,40 journals most frequently cited in biologica articles, according to the *World List o Scientific Periodicals*, with variations recommended by the USA Standards Institute.

UNITED NATIONS. Food and Agricultur Organization. *Terminology and Reference Section*
Dictionaries and vocabularies in th Terminology Reference Library 1966–1968 compiled by Gertrude Stolp Nobile. Rome the Organization, 1968.
93 p. (PU: Bib 12.)
The list, selected from the collection of th Terminology Reference Library, is divide into: technical dictionaries; FAO Vocabularies, and language dictionaries.

CONFERENCE ON GOVERNMENT INFORMATIO SYSTEMS. Ottawa, 5th–6th October 1967.
Proceedings. Ottawa, Economic Counci of Canada, 1968.
138 p.

INSTITUT FRANCAIS DES COMBUSTIBLES ET D L'ENERGIE
L'information dans le domaine de l'energie cas de la France.
Paper presented at the World Powe Conference, Moscow, 20th–24th Augus 1968.
26 p.

SCHEUBLEIN, M., *and others*
Maschinelle Literatur—Dokumentation i der pharmazeutischen Industrie.
Naturwissenschaften, vol.55, no.8, 1968 p.362–7.

LOWRY, CHARLES DOAK, *and* COCROFT, ROBER
Literature needs of food scientists.
Journal of Chemical Documentation, vol.8 no.4, November 1968, p.228–30.
Evaluation of the literature service available to food scientists. Points out th need for different types of service.

GORINSKII, V. N.
O tekhnicheskom perevode i referirovan inostrannykh istochnikov po gidrotekhnik i melioratsii.
Nauchno-Tekhnicheskaya Informatsiya, Seriy 1, no.10, 1968, p.7–10.
Translation and abstracting of foreig sources on hydraulic engineering and lan reclamation.

GRABILIN, YU N.
Nauchno-metodicheskaya rabota v oblas informatsionnoi deyatel 'nosti v ugol' no
Nauchno-Tekhnicheskaya Informatsiya, Seriy 1, no.10, 1968, p.18–19.
Research and methods guidance in the fiel of information for the coal industry.

AGEEV, N. V., *and* KOLESNIKOVA, T. P.
Razvitie nauchno-tekhnicheskoi informatsii po metallurgu za gody sovetskoi vlasti.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.9, 1968, p.3–7.
Development of metallurgical information in the Soviet Union, 1917–67.

NORTON, D. S.
The U.K.A.E.A. nuclear data library, February 1968. London, HMSO, 1968.
23 p., tables. (AEEW–M824.)

PAEPE, CLAUDINE DE, *and* OUPKO, JEAN-PIERRE
Une expérience moderne d'information chimique.
Industrie Chimique Belge, vol.33, no.10, 1968, p 855–65.
The chemical information section of the ntre d'Information et de Documentation tifique at the Belgian Bibliothèque B.

ET, M.
Centre de documentation africaine de la bliothèque royale de Belgique.
ulletin des Séances de l'Académie Royale des ciences, no.2, 1968, p.349–56.
History and functions of the Centre.

NSON, VICTOR J.
Development and operation of a specialized technical information and data center. (The Cryogenic Data Center).
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.219–24.

DE, P. L., *and* NOMANI, M. B.
Technical translation in the field of building science.
Indian Libraries, vol.2, no.2, September 1968, p.81–6.
Work of the Central Building Research Institute, Roorkee; recommendations for the improvement of the services are given.

DELBÓS, L., *and* DUMORT, . C.
L'informatique au service de la documentation bibliographique dans les sciences de la terre.
A.N.R.T. Information et Documentation, no.8, October 1968, p. –20.
Informatics in the service of documentation of earth sciences at the Bureau de Recherches Geólogiques et Minières.

GORSKI, ADAM
Badania patentowe i ich zwiazek z informacja naukowo—techniczna.
Aktualne Problemy Informacji i Dokumentacji, vol.13, no.5, 1968, p.15–21.
Patent research as related to scientific and technical information. Experience at the Institute of Agricultural Machinery, Poznán.

PIATKOWSKI, ANDRZEJ
Podstawy programowania zadán w branżowym ośrodku informacji technicznej i ekonomicznej.
Aktualne Problemy Informacji i Dokumentacji, vol.13, no.5, 1968, p.22–5.
Outline of programming the technical and economic information service at the Wroclaw Bureau of Forestry Machinery.

RHIND, RIDLEY
Management information systems, some dreams have turned to nightmares.
Business Horizons, no.11, June 1968, p.37–46.
Stresses the continued need for personal judgement, even with computerized management information systems, which must only be supplementary aids to decision-making.

WIESENBERGER, IVAN
Marketing a informacni cinnost.
Metodika a Technika Informaci, no.9, 1968, p.25–40.
The relationships between market research and information activities. The development is urged of marketing information centres to collect and evaluate data.

KENNINGTON, D., *and* ADAMS, R. J.
Selecting the right microfilm trade data retrieval system.
Electrical Review, vol.183, no.12, 20 September 1968, p.417–19.
Assesses the advantages and special features of the three technical catalogue microfilm storage/retrieval systems now available to electrical engineering companies in Britain.

COOPER, MARIANNE
Current information dissemination: ideas and practices.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.207–18.
Description and tabulated summary of seventeen current awareness information services.

Mechanization

ARTANDI, SUSAN
An introduction to computers in information science. Metuchen, N.J, Scarecrow Press, 1968.
viii, 145 p., illus.

BREKHOV, A. M.
Experience in machine processing of information in part/time systems. Washington, DC, Joint Publications Research Service, 1968.
31 p. (JPRS 44, 733.)
Originally published in Leningrad, 1966, as 'Opyt mashinnoy obrabotki informatsii v sistemakh SPU a kontrolem po vremeni', p.3–35.

KIMBER, R. T.
The cost of an on-line circulation system.
Program, vol.2, no.3, October 1968, p.81–94.
Compares the unit costs of the manual circulation system at Queen's University, Belfast, and those of the on-line computer-aided system in process of development.

KIMBER, R. T.
An operational computerised circulation system with on-line interrogation capability.
Program, vol.2, no.3, October 1968, p.75–80.
Describes the system in use at West Sussex County Library, Chichester.

DOWLING, MARK
Bookcard photocharging: a composite book loan method for libraries. London, the Author, 1968.
6 p.

ZIZKA, ROSTHSLAV
Erste Erfahrungen bei der praktischen Anwendung des MINSK–ARDIS–Systems in Information–und Dokumentationsarbeit.
ZIID Zeitschrift, vol.15, no.6, December 1968, p.254–8.
Preparation of an information bulletin using a MINSK computer at the Automobile Engineering Research Institute, Prague.

BAYLY, R.
Project MARC and the ICL 1900 series.
Program, vol.2, no.3, October 1968, p.95–101.

PUNCH card handling.
Computer Weekly, no.123, 23 January 1969, supplement p.1–8.
• Several articles on punch cards and their applications, and list of data preparation services.

SHELIMOVA, I. N.
Informatsionno–poiskovyi yazyk SINTOL.
Nauchno–Tekhnicheskaya Informatsiya, Seriya 2, no.9, 1968, p.17–24, 26.
Outlines the information retrieval language SYNTOL.

GEORGE, F. H.
Programming computers in ordinary English.
Data Processing, vol.10, no.6, November–December 1968, p.281–3.

TEYSSIER, EMIL G.
The handling and storing of tape.
Data Processing Magazine, August 1968, p.24–7.

*HOLLIDAY, F. G., *ed.*
Manual of stationery, office machines and equipment. London, British Stationery and Office Equipment Association, 1968.
1,034 p., illus.

STIBIC, VLADIMÍR
Technika a metody v dokumentacní a informacní sluzbe v CSSR kolem roku 1980.
Metodika a Technika Informací, nos.7–8, 1968, p.34–43.
Documentation and information services in Czechoslovakia in 1980—techniques.

Classification and Cataloguing

JOHNSON, ALBERT FREDERICK
A programmed course in cataloguing and classification. London, Deutsch, 1968.
132 p., facsims.

SHREIDER, YU A.
Mathematicheskaya model' teorii klassifikatsii.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.10, 1968, p.7–14.
Mathematical model of the theory of classification.

BEE RESEARCH ASSOCIATION
English alphabetical subject index to Universal Decimal Numbers used by the Bee Research Association in *Apicultural Abstracts* and in library subject indexes. London, the Association, 1968.
117 p.

PERREAULT, JEAN M.
Automatized retranslatability of codes.
Libri, vol.18, no.2, 1968, p.120–4.
Increasing the 'concreteness' or precision of UDC to make it more suitable for computer use.

SCIBOR, EUGENIUSZ
Proby zblizenia struktury UKD do klasyfikacji fasetowych.
Aktualne Problemy Informacji i Dokumentacji, vol.13, no.5, 1968, p.11–15.
Attempts to integrate UDC structure with faceted classifications; the work of D. Kervegant and J. M. Perreault.

MARCUS, IRVING
Agriculture and food technology in the Patent Office.
Journal of Chemical Documentation, vol.8, no.4, November 1968, p.225–8.
Classification of food and agricultural technology patents in the United States Patent Office.

GAVRILOVA, S. A., *and* MYSHEVA, I. A.
Klassifikatsiya kartograficheskikh materialov.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.10, 1968, p.15–17.
Classification of cartographic materials.

WÅHLIN, EJNAR
US—Universal System of classification developed by Ejnar Wåhlin with financial support from the National Swedish Council for Building Research, and the Swedish Council for Applied Research. Stockholm, the Author, 1968.
95 p.

GREAT BRITAIN. Central Statistical Office
Standard industrial classification, 3rd ed. London, HMSO, 1968.
44 p.

HAKULINEN, ERKKI
Nytt katalogiseringssystem.
Bibliotekbladet, vol.53, no.10, 1968, p.1214–16.
New system of cataloguing at the Karolinska Mediko-kirurgiska Institutet, Stockholm.

Language and Indexing

*UNITED STATES ATOMIC ENERGY COMMISSION. Division of Technical Information
Subject headings used by the USAEC Division of Technical Information; 7th rev. ed. edited by Robert E. Upchurch. [Washington, DC], the Division, 1968. 248 p. (TID — 5001 (7th Rev.).)

NOVA, N. I., *and* MARGARITOV, V. V.
vedenie elementov grammatiki v des-
tornyi informatsionno—poiskovyi
k po khimii i khimicheskoi promysh-
nosti.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.10, 1968, p.20–7.
Introduction of elements of grammar into a descriptor language for chemistry and chemical engineering.

GRAVESTEIJN, J.
Presentation d'un thesaurus des sciences de la terre sous forme de schemas fleches.
A.N.R.T. Information et Documentation, no.8, October 1968, p.21–8.
A thesaurus for the earth sciences using arrow diagrams.

RAHMANN, MANFRED, *and* SAMULOWITZ, HANSJOACHIM
Planung und Aufstellung eines Fachthesaurus.
Nachrichten fur Dokumentation, vol.19, no.6, December 1968, p.222–6.
Planning and compilation of a specialized thesaurus for agricultural management and techniques.

PELTZ, MARGARETA, *and* STEFANESCU, MARINA
Analizarea unar aspecte ale aplicarii metodei de indexare cóordonata in domeniul geologiei.
Studii si Cercetari de Documentare si Bibliologie, vol.10, no.3, 1968, p.311–19.
Some aspects of the use of co-ordinate indexing in the field of geology.

HUTTON, GEOFFREY, *and* ROSTRON, MICHAEL
Coordinate indexing: its use for product analysis.
Building, vol.215, 18 October 1968, p.125–8.

SAGALOVICH, N. M., *and* VEGER, M. G.
IPS na osnove predmetnogo ukazatelya.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.9, 1968, p.25–8.
Describes a co-ordinate indexing system based on the subject index vocabulary and the document collection.

KESTING, J. G.
A preliminary analysis of variant spelling forms derived from the Library of Congress list of subject headings: implications of its use in the non-American English-speaking world.
South African Libraries, vol.36, no.1, July 1968, p.10–14.

KEEN, E. MICHAEL
Measures and average methods for use in retrieval performance testing of indexing systems: thesis submitted for Fellowship of the Library Association. 1968.
Var. pag., diagrs. 70s.

LUFKIN, RICHARD C.
Determination and analysis of some parameters affecting the subject indexing process. Cambridge, Mass., Massachusetts Institute of Technology, Electronic Systems Laboratory, 1968.
47 p. (Report ESL—R—364.)

GOTLIEB, C. C., *and* KUMAR, S.
Semantic clustering of index terms.
Journal of the Association for Computing Machinery, vol.15, no.4, October 1968, p.493–513.
Describes a computer procedure to reorganize indexing vocabularies. The semantic association between indexing terms is determined, and then used for grouping the terms into clusters or concepts.

UNITED STATES STANDARDS INSTITUTE. Subcommittee on Indexes
Basic criteria for indexes.
11 p. (USAS Z39.4—1968.)
Committee chairman: John Rothman.
Proof read copy.

KORENNOI, A. A.
'Indeksy nauchnykh ssylok.' Ikh primenenie v naukovedenii i informatike.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.10, 1968, p.3–6.
The use of science citation indexes in the study of science and informatics.

GARFIELD, EUGENE
'World brain' or Memex? Mechanical and intellectual requirements for universal bibliographic control. Response by Ben-Ami Lipetz.
In SYRACUSE UNIVERSITY. School of Library Science
The foundations of access to knowledge . . ., 1968. p.169–201.

HARTHUN, NORBERT
Erfahrungen mit einer privatwissenschaftlichen Literaturkartei.
Nachrichten für Dokumentation, vol.19, no.6, December 1968, p.233–6.
Experience with a scientist's private literature card file.

KORVASOVÁ, KVETA
Pouzití cástí strojového prekladu pro

dokumentacní a vyhledavací cinnost.
Metodika a Technika Informací, nos.7–8, 1968, p.20–3.
Machine translation need for documentation and information retrieval.

Information Processing and Systems

LANCASTER, F. WILFRID
Information retrieval systems: characteristics, testing and evaluation. New York, John Wiley, 1968.
xiv, 222 p., diagrs. (Information Science Series.)

BORKO, HAROLD
The conceptual foundations of information systems. Responses by Robert A. Fairthorne and Saul Amarel.
In SYRACUSE UNIVERSITY. School of Library Science
The foundations of access to knowledge . . ., 1968, p.67–99.

MCCRACKEN, M C.
Data administration in an information system.
In CONFERENCE ON GOVERNMENT INFORMATION SYSTEMS . . ., 1967.
Proceedings, 1968, p.95–105.

ADLER, H. J.
The current Canadian time series data bank.
In CONFERENCE ON GOVERNMENT INFORMATION SYSTEMS . . ., 1967.
Proceedings, 1968, p.29–41.

MENDELSSOHN, RUDOLPH C.
The BLS data bank and information system.
In CONFERENCE ON GOVERNMENT INFORMATION SYSTEMS . . ., 1967.
Proceedings, 1968, p.17–28.

BRATAL'SKII, E. A., *and* TVERITSKII, R. V.
Problemy sozdaniya bol'shikh informatsionnovychislitel'nykh sistem i obrabotki informatsii na ETSVM.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.9, 1968, p 35.
Report on the Kiev conference, May 27–30, 1968, on the state of the art in research towards development of large-scale computing and information systems.

MERTA, AUGUSTIN
Metody a prostredky spracování informací v r. 1980
Metodika a technika informací, nos.7–8, 1968, p.6–14.
Information processing methods in 1980.

VEJSOVÁ, ANNA
Optimalizace informacních procesů metodami a prostredky — prognóza de roku 1980.
Metodika a Technika Informací, nos.7–8, 1968, p.15–19.
Prognosis of information processing methods until 1980.

PRINZ, BERND
Anwendung algebraischer Methoden bei der Aufstellung von Dokumentationssystemen.
Nachrichten fur Dokumentation, vol.19, no.6, December 1968, p.217–21.
Application of algebraic methods to the design of documentation systems.

Communication and Knowledge

SYRACUSE UNIVERSITY. School of Library Science
The foundations of access to knowledge: a symposium held at Syracuse University, 28th–30th July, 1965, edited by Edward B. Montgomery, [editing consultant, Daniel P. Bergen.] Syracuse, NY, the School, 1968.
vi, 206 p., illus. (Frontiers of librarianship, 8.)

GARVEY, WILLIAM D., *and* GRIFFITH, BELVER
Informal channels of communication in [illegible] behavioral sciences: their relevance in the structuring of formal or bibliographic communication. Response by Alfred de Grazia.
In SYRACUSE UNIVERSITY. School of Library Science
The foundations of access to knowledge . . ., 1968. p.129–51.

MENZEL, HERBERT
Informal communication in science: its advantages and its formal analogues. Response by Richard Orr.
In SYRACUSE UNIVERSITY. School of Library Science
The foundations of access to knowledge . . ., 1968. p.153–67.

MITCHELL, EWAN
The businessman's guide to speech making and to laws and conduct of meetings.
London, Business Books Ltd, 1968.
223 p., illus.

Professional Activity

SHERA, JESSE H.
An epistemological foundation for library science. Response by Laurence B. Heilprin.
In SYRACUSE UNIVERSITY. School of Library Science
The foundations of access to knowledge . . ., 1968. p.7–35.

PIETSCH, E. M. E.
Dokumentation und information auf dem Wege zur Wissenschaft–Inhalt und Wandel der Begriffe.
Nachrichten fur Dokumentation, vol.19, no.6, December 1968, p.199–207.
Documentation and information are moving towards scientific status—the meaning and changing of concepts.

MERTA, AUGUSTIN
Je informatika vedeckou disciplinou, nebo pouze technikou prace a prameny informaci?
Metodika a Technika Informaci, no.9, 1968, p.1–12.
Is informatics a discipline or a processing technique? Discussion of the trends and goals of informatics.

BLEK, A. V.
Informatika i bibliografiya.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.9, 1968, p.3–4.
Comments on an article by M. A. Briksman.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.1, 1968, p.3–6.
'Bibliography and documentalistics (informatics).'

SCHUR, H., *and others*
Education and training for scientific and technological library and information work, by H. Schur and W. L. Saunders with the assistance of Lisbeth J. Pargeter. [Report produced by the Postgraduate School of Librarianship and Information Science of Sheffield University for OSTI] London, HMSO, 1968.
vii, 79 p.

GREAT BRITAIN. Department of Education and Science. *Library Advisory Council (England) and Library Advisory Council (Wales)*
A report on the supply and training of [illegible]ans. London, HMSO, 1968.

[illegible]. C.
[illegible]h methods in library science.
[illegible] *Bulletin*, vol.13, no.2, June 1968, [illegible]–28.

[illegible]OW, NEAL
Doctoral study—key to what?
College and Research Libraries, vol.29, no.6, November 1968, p.483–5.
The advantages doctoral level study and research can bring to librarianship.

HUDSON, SPENCER
International standards for documentation.
B.S.I. News, January 1969, p.7–9.
Based on a paper given to the 1968 Aslib Annual Conference.

DAVIS, RICHARD A.
Theses and dissertations accepted by graduate library schools: 1966 through December, 1967.
Library Quarterly, vol.70, no.4, October 1968, p.442–52.
List compiled from titles submitted by thirteen American Library Schools.

AMERICAN INSTITUTE OF PHYSICS. Information Division
Bibliography of Information Division reports. New York, the Institute, 1968.
4 p. (ID 68–9.)

INFORMATION scientifique et technique; liste de quelques services documentaires mécanisés.
Bulletin des Bibliotheques de France, vol.13, no.11, November 1968, p.435–88.
Directory of twenty-three French mechanized documentation centres, giving details of their methods and services.

*SAUR, KLAUS GERHARD, *comp.*
Internationales Bibliotheks — Handbuch; 2nd ed., Teil 2—Afrika, Amerika, Asien und Ozeanien. Munich, Verlag Dokumentation, 1968.
p.865–1539.

*SAUR, KLAUS GERHARD, *comp.*
Internationales Bibliotheks — Handbuch: 2nd ed., Teil 3—Register. Munich, Verlag Dokumentation, 1968.
p.1541–837.

RICHARDSON, L. C.
Information systems handbook. Huntsville Ala, Brown Engineering, May 1968.
78 p. (AD 673 499.)
Directory.

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RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineering. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

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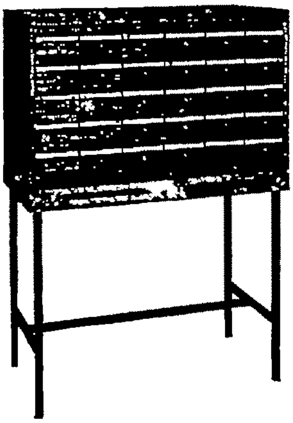

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WED.28.	Evening Meeting at Aslib. Scientific and technical library services in Czechoslovakia, by G. H. Wright.

June

TUE.17 – THU.19.	Chemical Group. Polymer technology course. Loughborough.
FRI.27 – SUN.29.	Electronics Group Annual Conference. Westcliff.

September

SUN.21 – WED.24.	43rd Annual Conference, Coventry.

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TUE.28 – THU.30.	Aslib/Construction Industry Research and Information Association. Joint Conference. Leamington Spa.

Scientific Information and the Government

The Director of Aslib was a member of a deputation from the Parliamentary and Scientific Committee which, at the suggestion of the Prime Minister, recently met members of the Government for a discussion of matters arising from the Committee's report *Collection, Dissemination, Storage and Retrieval of Scientific and Technical Information.* The deputation was received by Mr Anthony Wedgwood Benn, Minister of Technology, Lord Shackleton, Lord Privy Seal, Mrs Shirley Williams, Minister of State, Department of Education and Science, and Dr Jeremy Bray, Joint Parliamentary Secretary to the Ministry of Technology—certainly the first occasion on which so many Ministers had been involved together in discussions on scientific and technical information.

The discussion, which lasted an hour and a half, ranged widely over Government policies in this field but touched particularly on the co-ordination of Government activity, the needs of the National Reference Library of Science and Invention, the interests of the computer industry in the field, the responsibilities of industrial managements, and the need for publicity about Government policies and operations. It was agreed that the two groups would continue to meet periodically to keep the needs of the field under review.

Technical Translation Group

Since the last annual report on the Group's activities the year's programme has comprised: a paper on 'Computerized Dictionaries, Present and Future', read by Dr Sykes, of the Atomic Energy Research Establishment, Harwell; a talk by Mr G. E. Perren, Director of the Centre for Information on Language-Teaching, on 'An Information Service for Language-Teaching'; a visit to the Permanent Exhibition and to the Translation Department at the Shell Centre; a discussion meeting led by Mr A. B. Smith, of the Meteorological Office, Bracknell, and an activity, novel for the Group, in the form of a competition which underlined the pitfalls of translation and its character as a technique on which even the most experienced cannot always agree.

As an item most relevant to current developments generally, and to future needs concerning the technique of translation as a communication-tool and a link in the information-chain, Dr Sykes' paper perhaps merits rather fuller reportage here.

Dr Sykes spoke of his visit to the headquarters of the 'Bundeswehr' in Mannheim and to the Administrative Centre of the Coal and Steel Community at Luxembourg, where computerized dictionaries are installed.

The idea of the computerized dictionary was, he said, to eliminate the time spent in looking up information and to centralize the presentation of such information. Dr Sykes mentioned the project now being prepared by the Atomic Energy Authority; a survey was now being made as to probable costs and value to potential users. The Harwell project was confined to one language and one subject field, as a plan which would come to fruition in about five years' time. Dr Sykes had visited the two above-mentioned establishments in connection with this project; both were using the computer in the compilation of vocabulary in its widest sense but in different ways.

If, as indicated above, definitive answers cannot always be provided in translation, or provided with the necessary speed by human agency, then the task of the Group in the future must be to work towards the refinement of translation technique and on the analytical and synthetical functions required for the computer.

The Group's journal, the *Technical Translation Bulletin,* which is available to all Aslib members on subscription, was published three times during the year.

Conference on 'The Economic Value of Technical Information'

A one-day conference on 'The Economic Value of Technical Information' was held at the Adelphi Hotel, Liverpool, on 3rd March 1969. Organized by the Northern Branch of the Institute of Information Scientists, with support from the Confederation of British Industry, the conference was directed toward senior management concerned with the planning and execution of research and production in industry. The invited audience of 120, nevertheless, included over forty-five information scientists.

The conference was directed by Mr J. B. Lancaster, Chairman of Unilever (Merseyside) Ltd. Papers were presented by Professor C. F. Carter (Lancaster University) on scientific information and economic success; Mr Peter Spear (Rubery Owen & Co.) on information for research and development; Mr B. T. Turner (English Electric Co. Ltd) on information for design and production; Professor W. L. Saunders (Postgraduate School of Librarianship and Information Science, Sheffield University) on the contribution of the information scientist to economic success, and Dr D. J. Urquhart (National Lending Library for Science and Technology) on the need to train scientists and technologists to search for information themselves.

The content and presentation of the papers were of a high standard, and a variety of interesting topics was raised in the discussion periods. None of the speakers suggested any way of determining the positive value of information, but some dramatic examples of the cost of not having information were quoted. The conference as a whole provided a worthwhile review of the subject, presenting a convincing case to management as to the worth of information services, and assuring the information personnel that their work is earning increasing recognition.

It is intended to publish the proceedings of this conference in the near future.

Federation International de Documentation

The FID has announced a number of projects which are planned to continue or start this year. The following are a few highlights in the programme of the seven Study Committees:

(*a*) International thesaurus for scientific information.

(*b*) Co-operation with the Groupe d'Etude sur l'Information scientifique (France) in establishing an *Intermediate lexicon of documentation terms.*

(*c*) Collaboration with the Bibliographic Systems Center (Cleveland) in maintaining an international collection of classification systems and thesauri.

(*d*) Collection of information on algorithms developed for the processing of natural language text (in co-operation with the Group on Automatic Language Processing of the American Society for Information Science).

(*e*) Techniques for the 'paperless' transmission of information.

(*f*) Studies on concepts for systems design and the organization of networks and terminals.

(*g*) Study of small documentation systems, particularly the interface problems of manual and machine systems.

(*h*) Publication of an international list of technical journals for industry and the third edition of *National technical information services—world-wide directory*.

(*i*) Preparation of a *Guide for the training of documentation users* (contract from Unesco) and publication of the second edition of the *Guide to the world training facilities in documentation and information work*.

Under the control of the Central Classification Committee an extensive programme for UDC editions includes:

(*a*) the preparation of medium editions in English, Polish, Portuguese, Russian and Spanish;

(*b*) the publication of the Hebrew and Macedonian abridged editions, a supplement (1958–68) to the *Trilingual abridged edition* (contract from Unesco), and a World Meteorological Organization Guide to UDC.

ESRO/ELDO Space Documentation Service

This service is based on the computer searching of magnetic tapes on which are stored the indexed references to the reports in STAR (produced by NASA) and the 1,400 periodicals covered in the *International Aerospace Abstracts Journal.* 'Bespoke' searches are made in terms of each customer's requirements at a standard fee.

The most recent innovation is a new type of monthly up-dating service whereby the reports (approximately 6,000) added each month will be searched under about 110 subject headings (called Standard Profiles). At present there are about forty in science (e.g. piezoelectricity, auroras, neutrinos and anti-neutrinos) and about seventy in technology (e.g. solid propellants, reinforced plastics, flutter). The computer print-out for each SP is circulated to subscribers at a cost of 84 French francs (twelve issues) for each topic. There is a progressive reduction in cost per topic per annum as the number of topics subscribed to increases from five to twenty-five. Samples of Standard Profiles and further information can be obtained from Space Documentation Service, 114 Avenue de Neuilly, 92–Neuilly-sur-Seine, France.

Courses in librarianship and information work

The latest directory of short courses, which supersedes and up-dates previous issues, was issued by OSTI (Elizabeth House, 39 York Road, London SE1) in March 1969, and it is available on request. It is compiled from information supplied by organizers of courses and they are asked to notify OSTI at an early stage about new courses or proposed changes.

Construction Industry Research and Information Association (CIRIA)

The CIRIA Information Liaison Group has set up four working parties to study how to improve the production and dissemination of information for the construction industry. The areas to be covered are:

1 An evaluation of the usefulness of abstracts and their standardization.

2 (*a*) Preparation of a comprehensive programme of 'surveys of techniques', digests, advisory leaflets on recent developments, with particular reference to content, style and presentation.

(*b*) The development of data and information sheets, with particular reference to content and layout.

3 Films and film strips.

4 Other visual aids.

CIRIA and Aslib are organizing a joint conference under the heading 'It pays to be informed', to be held at the Manor House Hotel, Leamington, on 29th and 30th October 1969. Apply to Mrs R. G. Knight (CIRIA, 6 Storey's Gate, Westminster, London) for further details.

Anglo-American Cataloguing Rules 1967

Liverpool School of Librarianship is planning a 1½-day course on the Anglo-American Cataloguing Rules 1967, to be held on Thursday and Friday 15th and 16th May 1969. Speakers will include Peter Lewis, Chairman of the Library Association Cataloguing Rules Sub-committee; Michael Gorman, of the British National Bibliography; and a number of local librarians. There will be ample time for questions and discussion and the whole of Friday afternoon will be devoted to a 'question and answer' session. Further details are available from K. G. B. Bakewell, School of Librarianship, Liverpool College of Commerce, Tithebarn Street, Liverpool 2.

International Association of Technological University Libraries

The fourth IATUL Seminar on the 'Application of international library methods and techniques' will be held from 1st to 6th September 1969 in Delft, The Netherlands (Library of the Technological University, 101 Doelenstraat). It is open to 'All directors or their co-workers from libraries affiliated to universities, institutes or organizations of research level'.

International Congress of Applied Linguistics

The British Association for Applied Linguistics is organizing this second Congress on behalf of the Association internationale de Linguistique appliquée (AILA) and it will take place in Cambridge from 8th to 12th September 1969. This inter-disciplinary meeting will be of interest to information scientists, linguists, communications engineers, among others. (Apply for further information to AILA Congress, Department of Linguistics, Sidgwick Avenue, Cambridge.)

***Open*. Vaktijdschrift voor bibliothecarissen, literatuuronderzoekers, bedrijfsarchivarissen en documentalisten. Vol. 1 – January 1969 –**

This new professional monthly is intended for librarians, documentalists and archivists. It is a very laudable attempt to bridge the unnecessary gaps between the various branches of what is truly one discipline. It is, of course, particularly meaningful for a comparatively compact country like the Netherlands. It is well produced and includes English summaries for the main articles.

BRIEF REVIEWS

BIBLIOGRAPHY of bibliographies in political science, government and public policy . . . selected and processed by the Universal Reference System. Oxford, Pergamon Press, 1968. 946 p. £15.

In this bibliography of bibliographies the emphasis is on twentieth-century material although standard documents are listed. Included are bibliographies, books with bibliographic chapters, journals with good book review sections and bibliographic addenda, government publications and a few unpublished papers on political science and related fields. The publication is divided into two main sections: the catalogue of documents, which gives the full bibliographical details of the publications with annotations, and the index of documents, which is an alphabetical arrangement of authors and subjects. Appended are lists of publishers and periodicals cited in the volume.

BRITISH STANDARDS INSTITUTION. Universal Decimal Classification. English full ed. 614 Public health. Accident prevention. London, 1968. (BS 1000 (614).) 12*s* (15*s* to non-subscribers, including postage).

This latest part of the fourth international edition provides for such aspects as measures taken by official bodies to preserve the health of the population, preventive measures in cases of drowning, fire, explosion, exposure to extremes of temperature and personal protection equipment.

THE COMMITTEE ON LATIN AMERICA. Latin American economic and social serials. London, Bingley, 1969. 189 p. 50*s*. (SBN 85157 064 X.)

This publication, which is sponsored by the Committee on Latin America, lists Latin American and Caribbean economic and social serials publications, with details of holdings in United Kingdom libraries. The subject scope is fairly broad, the term 'economic' being taken to cover serials concerning important products of the area, even if they are mainly agricultural.

The main emphasis of the book is on current and recent serials; titles that ceased before 1945 are generally excluded. Serials are listed under country of origin; these sections are preceded by a general section covering the Latin American and Caribbean areas in general, although not all are published in these two areas. The form of entry follows that used in BUCOP: New Periodical Titles; in most cases publication details of each serial are given. There is an index of sponsoring bodies and a title index. There is also a note on indexing and abstracting services to Latin American periodicals by A. J. Walford and Peter Hoare.

This book should prove a useful addition to the documentation on Latin America.

NATIONAL LIBRARY OF MEDICINE. MEDLARS 1963–7, by Charles J. Austin. Washington, US Government Printing Office, 1968. 84 p. 75 cents.

This detailed account of four years' operation of a large-scale retrieval and publishing system—in many ways *the* pioneering achievement in mechanization—comes at a most opportune moment. On the one hand an important evaluation of the MEDLARS demand search service was carried out by F. W. Lancaster (see review of report in *J. Doc.* 24, 1968, p. 320–3). On the other hand NLM contracted in June 1968 with the Computer Sciences Corporation for the design and implementation of MEDLARS II.

For the production of its six regular periodical publications and nine published recurring bibliographies MEDLARS had a staff of approximately ninety people in January 1968. The figure includes thirty-nine on the computer side (of which fourteen are professionals and twenty-five clericals). This, together with a statement of the total of equipment invalued, provides a useful indication of basic costs.

A chapter is devoted to each of the sub-systems, input, retrieval and publication. There is also a detailed discussion on the computer-aided cataloguing system using MEDLARS equipment. The two major projects are the *NLM Current Catalog* (bi-weekly, cumulated quarterly with a final annual volume) and standard cards for the catalogues.

The final conclusions very frankly and fairly assess both the strengths and the weaknesses:

> 'Some of the library's original objectives were met completely; others were not. In general, however, NLM was able to design and implement a large-volume production system capable of meeting the multiple requirements of published indexes and individual literature searches. Some of the original plans proved to be unrealistic—for example, the desired ability to provide two-day turnaround for demand searches.'

WELLISCH, H. An international centre for standards documentation. Tel Aviv, Israel Society of Special Libraries and Information Centres, 1969. 24 p.

The proposed centre would (1) standardize the usage of UDC for standard classification by assigning approved and uniform UDC-numbers; (2) convert all data relating to the world's standards to machine-readable form (punched cards and magnetic tape) for information retrieval by subject, country, language, etc., and for exchange of data between information centres and users of standards; (3) store all current standards as hard copy and on microfiche; (4) store all superseded standards on microfiche only; (5) publish lists and indexes as well as polyglot subject dictionaries.

NEW MEMBERS
CORPORATE

Name	*Locality*	*Representative*
Alenco Ltd	Maidenhead	Mr K. M. S Maconick
Ashton-under-Lyne Public Library	Ashton-under-Lyne	Mr T. Bolton
Beecham Research Laboratories Product Research Library	Worthing	Mr M. S. Davis
British Thermostat Co. Ltd	Sunbury-on-Thames	Miss C. H. Talbot
Burroughs Wellcome & Co. (USA)	USA	Dr F. C. Kull
Carleton University	Canada	The Librarian
Centralna Tehniska Knjiznica	Yugoslavia	Mr Jose Kokole
Chorley College of Education (Blackburn Div.)	Blackburn	Mr E. Dews
College of St Mark and St John	London	Mr R. W. Stewart
Dunford Hadfields Ltd	Sheffield	Mrs Jean Brown
Elga Products Ltd	Lane End, Bucks	Mr J. Glover
European Research Centre, Texaco	Belgium	Mr J. H. R. Bragg
Robert Fletcher & Son Ltd	Stoneclough	Mr A. Gordon-Stewart
Food Industries Ltd (Unilever Composite)	Birkenhead	Miss M. E. Williams
GEC/AEI Electronics Ltd	Leicester	Mr L. G. Shepherd
GKN Foundations	Ryton-on-Dunsmore	Miss R Clarke
Garretts Green Technical College Library	Birmingham	Mr W. A. Viges
Gottlieb Duttweiler Institute for Economic and Social Studies	Switzerland	Mr J. G. Cartwright
IPC Magazines Ltd	London	Mr P. F. Wilson
Ibadan University School of Librarianship	Nigeria	Mrs C. Olubejo
Inbucon Ltd	London	Mr T. Landau
Indian Institute of Technology, Madras	India	Mr V. S. Nazir Ahmed
Institute of Electoral Research	London	Col H. E. S Brightly
International Copper Development Council	London	Dr T. B Marsden
Kolej Pertanian Malaya	Malaysia	Dr Mohd Rashdan
Koninklijke Papierfabrieken van Gelder Zonen NV	Netherlands	Mr H. Romeijn
Leasco Systems & Research Co. Ltd	London	Mr D. H Barlow
Lianco Laboratories	Spain	Mr Jose A. Serraclach
Middle East Technical University	Turkey	Mr M. Dooley
National Institute of Medical Research	Hampstead	Mr A. C A. Pickford
National Institute of Medical Research, Ridgeway	London	The Librarian
Nuffield College	Oxford	Miss C. Kennedy
Open University	London	Professor W. Perry
Oscar Faber & Partners	St Albans	Mr R. P W. Bennett
Polyalloys Ltd	London	Mr Herbert L Gee
Printing & Publishing Industry Training Board	London	Mr J. E Hayward
J. & S. Pumps Ltd	Horley	Mr P. Somlo
Roussel Laboratories Ltd	London	Mr A. J. Johnston
Royal United Service Institution	London	Mr J. R. Dineen
South Birmingham Technical College	Birmingham	Miss J D. O'Driscoll
J. Walter Thompson Co. Ltd	London	Miss G. Clegg
University College School of Librarianship and Archives, London	London	Professor B C. Brookes
University of the South Pacific	Suva, Fiji Islands	Mrs G. Kirwin
University of Oxford, Faculties of Physical and Biological Sciences, Experimental Unit	Oxford	Dr Peter Leggate

Name	*Locality*	*Representative*
Wellcome Foundation Ltd, Medical Information Centre	London	Mr D. Smith
Wellcome Veterinary Research Station	Frant, Sussex	Miss M. Burridge
Zavod SRS za produktivnost dela (Slovenia Productivity Institute)	Yugoslavia	Mr Radovan Andrejcic

INDIVIDUALS

Name	*Locality*
Mr Julius Baker	London
Miss M. Bonnekamp	London
Mr Rex Cooke	London
Mr A. A. Dalvi	India
Mrs C Fuller	Sutton
Mr P L. Harper	Brighton
Mr D E. Hayler	Luton
Miss J. R. Hurwitz	South Africa
Mr J. F. H. M. Lammers	Netherlands
Mr Jack Mills	London
Mrs C. B. Richard	Edinburgh
Miss Mary Sale	Gloucester
Mrs H. A. Smith	Aberystwyth
Mr H. Wellisch	Israel
Miss Viola Winn	Oxford

Mr Alan Unwin

Alan Unwin, who has been our Publications Officer since July 1965, left the staff of Aslib at the end of February to become a writer of instructional programmes. He is now working with Cambridge Consultants (Training) Ltd, at Cambridge, an organization which specializes in the development of algorithms, programmed learning and similar techniques, and their application to technical instruction in industry, commerce and government. His colleagues at Aslib wish him well in these new activities.

RESEARCH AT ASLIB

B. C. VICKERY

Assistant Director (Research), Aslib

Summary of a talk at the Chemical Group Meeting, Wednesday 29th January 1969

THE Aslib Research Department was set up in 1959. Because of the difficulty of identifying the most significant problems and the need to establish appropriate experimental techniques, it initially tried its hand using a variety of approaches. During the period 1959–64 a survey was made of some fifty industrial information/library units, using structured interviews to collect data; a questionnaire study of the literature-searching methods used by research scientists was undertaken, and a number of library procedures and problems were quantitatively surveyed. These latter included delays in binding, borrowing costs, inter-library loan patterns and the effectiveness of translation indexes. Another subject investigated during this same period was conference proceedings: duplication of publication, their lack of subject indexes, and their coverage by abstracting services.

In 1965 Aslib Council decided that particular emphasis should be placed on two lines of development—the application of mechanical methods and the study of operational techniques in libraries and information units. This decision was prompted by the need to develop a team capable of responding to the growing demand from Aslib members for advice and assistance. A joint Aslib/DSIR (now OSTI) working party, set up to explore the implications of this change, recognized that some conflict might arise between the development of technical competence as consultants and contributions to original research. A further complication is the pattern of financial support. The total OSTI grant, which is related to the Aslib membership contribution, consists of two portions—an unconditional grant and grants specifically to finance nominated projects. Further income is provided by fees from consultancy work, the importance of which is expected to grow. These changes in direction were accompanied by an increase in the staff of the department which now consists of nineteen, including sixteen seniors.

During the period 1965–68, the new interests were developed, though without discarding the earlier interest in user surveys and bibliographic analysis. In fact, several special OSTI studies commissioned during this period were concerned with those early interests. Examples of recent work in this field are:

(*i*) Coverage, overlap and effectiveness of indexing in abstracts journals.
(*ii*) Identification of the most cited British science journals.
(*iii*) User demand in 104 libraries (by questionnaire).
(*iv*) Metals information—comprehensive study of user requirements, library resources and secondary publications.

During this same period the following mechanization studies were also undertaken:

(*v*) Feasibility of computer-typesetting *Physics Abstracts*—the initial eighteen months' study was performed by Aslib.
(*vi*) Computer-typesetting of Aslib *Index to Theses.*
(*vii*) Mechanization of location records in regional bureaux.
(*viii*) On-line computer loan system for Harwell library.

As a prelude to the study of operational techniques in libraries and information units, it has first been necessary to gain a thorough understanding of the scope, variety, cost and efficiency of the clerical procedures involved, and to learn suitable systems analysis and method study techniques. Though the need to find libraries which could be studied has resulted in much work being done in universities, libraries of all types have been studied comparatively. Further studies being undertaken in this area include a comparison of the operation of specialized information centres and a project on thesaurus construction.

Three projects planned for the future are:

(*a*) The feasibility of computer use in the Commonwealth Agricultural Bureaux.
(*b*) Use of small-scale mechanization, particularly punched cards or tape, in special libraries.
(*c*) Desirability of locating computer facilities at Aslib for the purpose of providing services to members and aiding research.

The first of these is a special project commissioned by OSTI but comments upon (*b*) and (*c*) would be welcome. The general theme for the future will be 'effectiveness and efficiency', since this is fundamental to all projects.

DISCUSSION

Mr P. F. Cole (the Chairman) invited Mr Vickery to indicate how his staff were organized; how the available effort was distributed between consultancy work, OSTI special projects and internally developed Aslib research; and, finally, how projects were selected and controlled.

Mr Vickery said that the nominal organization pattern was as follows:

Team	*No. of Staff*
Mechanization	6
Survey	3
Advisory and consultancy	2
Operational techniques	5
Clerical	2
Head of department	1
	19

In practice, however, it was not possible to work in watertight compartments. Any one study might involve people from more than one of these teams; there was frequent interchange of staff and temporary attachment between teams. The distribution of effort last year was indicated roughly by the following breakdown of financial support: General research supported by Aslib and OSTI £33,000; OSTI special projects £13,000; Consultancies £10,000.

To deal adequately with the selection and control of projects would require more time than was available and he therefore preferred not to attempt it.

Mr T. Whitehall (Brooke Bond Liebig Ltd) thought it would be beneficial if the Aslib Research Department communicated its ideas more widely to the Aslib membership and received in return a more extensive feedback than at present. There must, by now, be a fund of specialized knowledge which could be of value to members who did not require investigational work but did need to be kept up to date on new ideas and techniques in the library/information field. Mr Vickery replied that very many more Aslib members visited Research Department to discuss their problems than ever commissioned consultancy work. However, he agreed that efforts should be made to meet even more members and undertook to explore the publication of more short notes on work done in the Department.

Mr P. O'N. Hoey (J Lyons & Co. Ltd) suggested that members' queries, which could not be satisfactorily answered by the Aslib Library or Information Department, should be redirected to Research Department, where relevant expertize might be available. Mr Vickery said there was already an arrangement that Research Department, particularly the advisory and consultancy staff, would be called in whenever needed. He hoped the arrangement was working effectively. Mr Hoey (in a written comment) observed that, in his experience, the arrangement could be improved. Mr P. Vickers (Aslib Research Department) confirmed that redirected inquiries were often received in Research Department.

Mr Vickery added that Research Department was also heavily committed to passing on its experience by providing lecturers for Aslib courses. Mr Vickers had been involved in developing programmes for all the recent Aslib mechanization courses.

Mr B. T. Stern (Wellcome Foundation) asked whether Research Department was assuming the functions formerly performed by the Aslib liaison officer and would be visiting the industrial members regularly in future. Mr Vickery replied that there were no plans for routine visits to members and, indeed, Research Department resources were inadequate for this. However, from time to time visits were made, by invitation, to discuss members' problems. He hoped that, as the advisory and consultancy work built up, it might be possible to make more such visits.

Mr Stern asked about the long-term direction of Aslib Research. Would there be a collection of information on the general problem of using purchased packages of computer tape? At the moment this problem was handled by voluntary effort through the Computer Applications Group. Mr Vickery said that individual needs varied so much that he hesitated to suggest that Aslib Research could ever produce an optimum system of general use to everyone. A more realistic approach was to identify specific groups of organizations with similar problems and then attempt to find something which would benefit all or most of them. One project which might be useful to a wide range of Aslib members was the use of punch card or punch tape machines in small special libraries. Any attempt to extend this principle to designing an optimum computer-based system, for use by the larger members, would require more experience of computer systems than Research Department had yet accumulated. In fact, the most experienced staff in the Department were sceptical of this approach which would, of course, bring them into competition with the computer manufacturers and computer service agencies with their much greater resources. There was a real need for the Research Department to obtain the assistance of members in defining how Aslib's limited resources could be most effectively used to aid the largest possible number of its members.

Dr W. E Batten (Imperial Chemical Industries Ltd) said that, in any real situation, the first problem was to discover exactly what the inquirer wanted and the second problem was the retrieval of the required information. The second problem was often regarded as very much simpler than the first and therefore tended to be neglected. He thought perhaps this area offered the prospect of some 'cheap acceleration'.

Mr Vickery said there were many different aspects to retrieval. There was the intellectual problem of improving the match between what the user asks for and what the indexer uses.

This could to some extent be tackled 'in-house', but to improve the physical retrieval of books in a large library one needed to go there and look at the particular restraints under which that library operated. Some of these restraints were human and some physical, for example the shape of the library building. Research Department were becoming increasingly interested in the problems of physical arrangement, physical retrieval and guiding users around, particularly in very large, complex libraries. Such problems were certainly not regarded as secondary in departmental thinking.

Mr A. E. Cornfield (BP Chemicals Ltd) asked what had been done about 'who knows what' indexes. Mr Vickery replied that an OSTI pilot study had shown that it was extremely difficult to collect reliable information on the expertize of scientists and technologists over the country as a whole, and the study had not therefore been pursued. Aslib itself had not worked on this problem but he hoped that, if OSTI eventually initiated such a project, Aslib might participate.

Mr Cornfield said that everybody talked about mechanical retrieval of information but what was really needed was data retrieval. Information retrieval yielded only a number of references —often too numerous and too inaccessible to be useful, while data retrieval could give the actual facts required directly. The question was whether the intellectual effort should be put in at the input or output stage of retrieval. Mr Vickery replied that Research Department had had relatively little experience of data retrieval but recognized it as an increasingly important problem. He hoped to begin exploring it in the later part of this year.

Mr S. Francis (North-western Polytechnic) asked whether the knowledge of research methodology accumulated by Research Department could usefully be communicated outside—perhaps through the library schools. Mr Vickery said he felt there was still a great deal to learn about methods, and he recognized that mistakes were still being made, but a start had been made in communicating the acquired knowledge. His staff had lectured on methods at library schools and in courses provided by Aslib.

A STUDY IN THE SOURCE LITERATURE OF PLASMA PHYSICS

H. EAST *and* A. WEYMAN

Aslib Research Department

Object of the Study

THE authors of this paper were formerly involved in designing computer-assisted services for physicists, particularly with respect to the improvements to facilities offered by *Physics Abstracts*. This study arose from discussions concerned with defining what the literature of physics is. This is an extremely difficult task, but one which has to be faced by those providing a service which aims to give an acceptable coverage of the relevant literature.

In practice a group of knowledgeable individuals get together and decide what areas of study shall be defined to be relevant to the service and what journals and other literature sources there are which, according to their own experience in the field, are likely to contain relevant information. Whether or not a journal is scanned regularly by an abstract service thereafter largely depends on the yield of items it produces.

In this study we have attempted to obtain information on what the literary sources of information are for workers in the plasma physics field by examining the reference or citations made to the literature in over a thousand publications. The fact that the publications had been selected for abstracting in the 'plasma physics' section of *Physics Abstracts* led us to assume that they were all relevant to the subject field in question.

Source of Material

All abstracts from the 1965 'plasma physics' section of *Physics Abstracts* were taken as the source material for this study. Each item for which there was an abstract published is called a *Source item*. There were 1,026 source items in the sample. These items came from journals, reports, conference proceedings and books, and the distribution of material is indicated in Table 1.

TABLE I

Type of Publication	*Number of publications of type in previous column*	*No. of abstracts = no. of source items*
Journals (titles)	105	985
*Reports	4	16
Conference proceedings	5	15
Books	5	10
Total	119 source publications	1,026 abstracts

* UKAEA Reports only.

The years of publication of the source item were as follows: 584 in 1965, 414 in 1964, twenty-five in 1963 and three in 1962.

Method

For each source item a list was prepared of the footnote references (or 'citations') made by the author. The items in this list are referred to as *Cited items*. For each source of cited item the following information was recorded and afterwards transferred into eighty-column punched cards.

Physics Abstracts serial number (source items only).
Identity of the publication.*
Form of publication (e.g. journal, patent, etc.).
Year of publication.
Volume no. and issue no. (where applicable).
Page no.
First author (coded).

The volume, issue and page numbers and first author code were, for the purposes of this study, redundant information carried in the records and were intended to help in the identification of items ambiguously cited by authors, or items which had been keypunched inaccurately. In the event this precaution proved very useful.

The punched card records were converted to magnetic tape, and a sort was made in order to segregate the cited items into groups relating to the form in which they were published, and within these groups to bring subgrouping together (e.g. all items cited in a given journal). From a print-out of this material, the data presented here were obtained.

The cited items were classified into the following forms:

Journals.
Reports.
Conference proceedings.
Books.
Tables of data, physical constants.
Theses.
Private communications.
Items 'to be published'.
Unidentified.

Conference proceedings proved to be a somewhat unsatisfactory grouping, since this form tends to overlap with journals, books and possibly reports. An arbitrary decision was made not to segregate individual papers presented at conferences from journals. However, a supplement to a journal presenting a collection of papers given at a conference was counted as a proceeding. Books which were essentially conference proceedings, but with a title supplied by the publisher other than that of the original meeting, were also counted as proceedings.

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* For journals, ASTM CODEN were used. Where CODEN were not available, or applicable, an arbitrary four-digit numeric code was allotted to the publication. A look-up identification file for the numeric codes was maintained.

Items described as 'to be published' or having an appellation of similar meaning were grouped together, regardless of whether the journal in which publication was intended was indicated or not. 'Unidentified' items were those for which the citing author had not given sufficient information to identify the item. A combination of inspired guess-work and intensive research could perhaps have reduced the number of unidentified items. Since, however, they consisted of only about 2 per cent of the total, it was not considered profitable to attempt to do this.

For each form of material the most cited items were listed. In addition for journals some information has been provided on the publishers. For journals, also, for the purposes of comparison of 'abstraction rates' to 'citation rates', a list was prepared of the journals yielding most abstracts to the 'plasma physics' section of *Physics Abstracts* over a two-year period (1965–66).

Analysis of the Data

(1) *General*

The 1,026 source items furnished 11,901 citations, an average of 11.6 citations per source item.

The number of citations made to the various publication forms are displayed in Table 2 and Fig. 1.

The journal literature accounted for approximately two-thirds of the items cited in this sample. It is perhaps surprising that only 5.9 per cent of the citations were to the report literature, since plasma physics is a subject area in which a large number of reports are published. (24.4 per cent of the items abstracted in a similar section of *Nuclear Science Abstracts* in 1965 were reports—see Table 9.)

It is also interesting to note that counting 'private communications', 'to be published' and unidentified items together, 3.1 per cent of the cited items were possibly not available to the user. (By an 'available item' we mean, in the words of Dr B. M. Crowther, ex-editor of *Physics Abstracts*: 'an available item is one which is findable in libraries by an indefatigable searcher'.)

The 'average age' of cited items in each form was calculated. Although one citation referred to a table published in 1870, the majority of citations were, as it is to be expected, to much more recent material.

Form	*'Average Age'*
Journal	4 years
Report	3 years
Conference proceedings	4 years
Books	6 years
Theses	4 years
Tables, etc.	12 years

(2) *Journals*

In all, 343* journals were cited in this sample. Table 3 gives a list of the first seventy of the most frequently cited journals, ranked by frequency of citation. Ninety per cent of all the citations to journals were to these seventy titles. Fig. 2 illustrates the percentages of the citations made to the journals ranked in the order given in Table 3. From this it can be seen that one journal (*Physics of Fluids*) accounted for 12 per cent of the citations, two journals for 24 per cent, three journals for 32 per cent, five journals for 41 per cent, etc.

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* Cover-to-cover translations were not counted as separate journals. Thus citations to the AIP translation journal *Soviet Physics—Technical Physics* have been counted as citations to *Zh. Tech. Fiz.*

It may be noted that three of the first eight journals in Table 3 (*Phys. of Fluids, Phys. Rev. Letters* and *J. Nuclear Energy*, Part C) are journals which commenced publication in the late 1950s.

In Table 4 are displayed the results of counting the number of items abstracted in the 'plasma' section of *Physics Abstracts* over a two-year period (1965–66) in terms of the journals from which the items came. The journals have been ordered in terms of the 'yield' of abstracts and for the purposes of comparison the rank order of the journal in Table 3 is included. Only the first twenty journals are listed. (It should be noted that the items cited and the items abstracted are not the same and, indeed, the majority of cited items were published before 1965.) The two rank orders are by no means identical. For example, *Comptes Rendues* has a high yield of 'abstractable' items, yet was not highly cited in the sample of literature studied. Table 5 gives the journals which were not in the first twenty journals giving a high abstract yield, but nevertheless were cited a hundred or more times in the sample. All of these journals are, in fact, regularly abstracted in *Physics Abstracts* and one can perhaps assume that items from them warranting entry in the 'plasma' section of *Physics Abstracts* were sparse during the period 1965–66.

TABLE 2. *The number of citations made to each form of publication.*

Form of publication	*No. of citations*	*Percentage of total*
Journals	8,196	68.9
Books	1,519	12.8
Conference proceedings	907	7.6
Reports	707	5.9
Theses	103	0.9
Private communications	94	0.8
To be published	77	0.6
Data tables, etc.	55	0.5
Unidentified	243	2.0
Total	11,901	100.0

A further point of interest is the predominance of the American Institute of Physics publications in this field. Of the 343 journals cited, eleven important journals giving a yield of 3,086 out of 8,196 (37.7 per cent) citations are published by, or in collaboration with, the American Institute of Physics. In addition, the AIP publishes or collaborates in the publication of cover-to-cover translations of five Russian journals mentioned in the list. These journals were cited 1,220 times and account for 14.9 per cent of the total citations. Thus of all the citations studied, 52.6 per cent were to journals either published initially by the AIP or published in cover-to-cover translations by that organization.

If the count of citations to journals is accepted as being a measure of the

TABLE 3. *List of journals by order of frequency of citation.*

Rank	*Journal name*	*No. of citations*	*Cumulative total*
1	*Phys. of Fluids*	1,012	1,012
2	*Phys. Rev.*	960	1,972
3	*Zh. Eksper. Teor. Fiz.*	635	2,607
4	*Zh. Tech. Fiz.*	372	2,979
5	*Phys. Rev. Letters*	361	3,340
6	*J. Appl. Phys.*	251	3,591
7	*Proc. Roy. Soc.* (Series A)	202	3,793
8	*Plasma Phys.—Accelerators—Thermonuclear Res.*	199	3,992
9	*J. Chem. Phys.*	195	4,187
10	*Bull. Amer. Phys. Soc.**	191	4,378
11	*Z. Phys.*	156	4,534
12	*Nuclear Fusion* (*J. Plasma Physics and Thermonuclear Fusion*)	156	4,690
13	*Proc. Phys. Soc.*	142	4,832
14	*Dokl. Acad. Nauk.* (SSSR)	141	4,973
15	*Z Naturforsch* (a) *Astrophysik, Physik und Physikalische Chem.*	131	5,104
16	*J. Phys. Soc.* (Japan)	123	5,227
17	*J. Geophys. Res.*	116	5,343
18	*Rev. Mod. Phys.*	102	5,445
19	*Ann. Phys.* (Germany)	100	4,545
20	*Atomnaya Energiya*	99	5,644
21	*Phys. Letters*	93	5,737
22	*Rev. Sci. Instrum.*	91	5,828
23	*Canad. J. Phys.*	81	5,909
24	*Astrophys J.*	73	5,982
25	*Physica*	71	6,053
26	*Nature*	69	6,122
27	*CR Acad. Sci.* (France)	65	6,187
28	*Ann. Phys.* (New York)	58	6,245
29	*Uspekhi Fiz. Nauk.*	58	6,308
30	*J. Res. Nat. Bur. Stand,* Section D Radio Science	58	6,361
31	*Izv. Vysshikh Uchebn. Zavedenii, Radiofiz. Bull. Institns.* Higher Educ, Radio phys.	56	6,417
32	*Appl. Phys.* Letters	52	6,469
33	*Phil. Mag.*	50	6,519
34	*J. Fluid Mech.*	50	6,569
35	*Proc.* IRE	48	6,617
36	*Ann. Phys.* (USA)	45	6,662
37	*Ark. Fys.*	43	6,705
38	*Fiz. Zh.* (Moscow)	42	6,747
39	*IEEE Trans. Antennas Propagation*	42	6,789
40	*General Electric Review*	31	6,820
41	*Bell System Technical Journal*	29	6,849
42	*J. Math. Phys.* (New York)	27	6,876
43	*Austral J. Phys.*	27	6,903
44	*Nuovo Cimento*	26	6,929
45	*Optikai Spektrosk*	25	6,954
46	*Progr. Theor. Phys.*	24	6,978
46	*Proc. Inst. Elect. Electronic Engrs.*	24	7,002
48	*Radiotekhnika i Electronika*	23	7,025
49	*J. Opt. Soc. Amer.*	22	7,047
49	*IEEE Trans. Micro wave Theory Tech.*	22	7,069
49	*App. Sci. Res.* Section B	22	7,091

* This publication contains abstracts only.

TABLE 3. *List of journals by order of frequency of citation*—continued

Rank	*Journal name*	*No. of citations*	*Cumulative total*
52	*J. Amer. Chem Soc.*	20	7,111
53	*Geomagn i Aeronomiya*	19	7,130
54	*Z. Angew. Phys.*	18	7,148
54	*J. Quant Spectrosc. Radiative Transfer*	18	7,166
54	*Ericsson Tech.*	18	7,184
57	*Pribory Tekh.* Eksper.	17	1,201
58	*J. Inst. Elec. Engrs.* (Japan)	16	7,233
58	*Planet. Space Sci.*	16	7,217
60	*Z. Astrophys.*	15	7,248
60	*Proc. Instn. Elect. Engrs.*	15	7,263
60	*Proc. Cambridge Phil. Soc.*	15	7,278
63	*Ukrayin. Fiz. Zh.*	14	7,292
63	*Astron. Zh.*	14	7,306
65	*Phil. Trans.* (Sec. A)	13	7,319
65	*J. Atmos. Terrest. Phys.*	13	7,332
67	*Appl. Optics.*	13	7,345
67	*Amer. Inst. Aeronaut and Astronaut. J.*	13	7,358
69	*Czech Z. Phys.*	12	7,370
69	*Priklady. Mat. i. Mekh.*	12	7,382

TABLE 4. *List of journals in order of 'abstract yield' over a two-year period* (1965–66)

Journal	*No. of abstracts on plasma physics*	*Rank order 'Abstract yield'*	*Rank order 'Citation rate'*
Phys. of Fluids	345	1	1
Zh. Tech. Fiz.	219	2	4
J. Phys. Soc. (Japan)	80	3	16
C.R. Acad. Sci. (France)	79	4	27
J. Appl. Phys.	78	5	6
Zh. Exper. Teor. Fiz.	78	5	3
Nuclear Fusion	73	7	12
Plasma Phy.—Accelerators—Thermonuclear Res.	70	8	8
Phys. Rev. Letters	67	9	5
*Phys. Rev.**	55	10	2
Phys. Letters	53	11	21
Z. Naturforsch (A)	48	12	15
Rev. Sci. Instrum.	43	13	22
Atom Energiya	37	14	20
Teplofiz Vysokikh Temp.	36	15	—
J. Res. Nat. Bur. Standards D	33	16	30
Canad. J. Phys.	31	17	23
Appl. Phys. Letters	29	18	32
Dokl. Acad. Nauk. (SSSR)	28	19	14
Nuovo Cimento	28	19	44

* Mr L. J. Anthony has pointed out to us that the apparent anomaly here may be explained by the reduction of the number of papers on plasma physics topics published in *Phys. Rev.* from 1964 onwards. The same may also be true of *Proc. Roy. Soc.* A. (See Table 5.)

amount of literature being used by research scientists, one is led to the conclusion that approximately half the journal literature used in plasma physics is published, in one form or another, by the AIP.

The data given here refer to citations to journals and not to particular items published in the journals. While one would expect there to be a direct relationship between the number of citations a journal receives over a particular period and the number of items published in the journal, the presence of some very highly cited papers could distort the picture.

The citations to three journals were examined in order to establish the number of papers that were being cited in a given period. The journals were *Phys. of Fluids, Nature* and *C. R. Acad. Sci.* (France) being ranked first, twenty-sixth and twenty-seventh in the citation frequency list. Citations to papers published in these journals over the period 1961–1964 inclusive were examined. The following data were obtained:

Journal title	*No. of papers cited* (1961–4)	*No. of citations to papers in previous column*	*Average no. of citations per paper*
Phys. of Fluids	372	793	2.1
Nature	21	30	1.4
C. R. Acad. Sci. (France)	41	52	1.3

The actual number of citations for each paper cited from *Phys. of Fluids* (1961–4) publications were as follows:

199 papers were cited 1 time
84 ,, ,, ,, 2 times
39 ,, ,, ,, 3 ,,
19 ,, ,, ,, 4 ,,
7 ,, ,, ,, 5 ,,
7 ,, ,, ,, 6 ,,
6 ,, ,, ,, 7 ,,
3 ,, ,, ,, 8 ,,
3 ,, ,, ,, 10 ,,
3 ,, ,, ,, 11 ,,
1 paper was cited 13 times
1 ,, ,, ,, 14 ,,

These figures indicate that a heavily cited journal is likely to contain papers which are themselves more heavily cited, i.e. that the 'core' journals tend to attract the most citable papers.

TABLE 5. *Journals highly cited (i.e. one hundred or more times) not in the high abstract yield list*

	Citation count rank	*No. of citations*
Proc. Roy. Soc. (A)	7	202
J. Chem. Phys.	9	195
*Bull. Amer. Phys. Soc.**	10	191
Z. Phys.	11	156
Proc. Phys. Soc.	13	142
J. Geophys. Res.	17	116
Rev. Mod. Phys.	18	102
Ann. Phys. (Germany)	19	100

* *Physics Abstracts* does not copy abstracts from this publication, hence its ambiguous inclusion in this Table.

(3) *Books*

Books were the second most heavily cited publication form—12.8 per cent of all citations were to books. In Table 6 are listed the titles of all books cited more than twenty times. The eleven books in this list accounted for approximately 28 per cent of the citations to books. In all, 529 separate items were cited, the most cited items being clearly directly related to plasma physics, and a large number of less cited monographs dealing with other areas of physics, mathematics, etc. (See Fig. 3.)

TABLE 6. *Books cited more than twenty times*

Physics of fully ionised gases. L. Spitzer. New York, Interscience, 1956. (2nd rev. edition, 1962.)	80
Problems in plasma theory (Voprosi teori plazmi), ed. by M. A. Leontovich. Moscow, 1963–64. 4 vols.	52
Plasma physics and the problem of controlled thermonuclear reactions, ed. by M. A. Leontovich. Oxford, Pergamon Press, 1959–61. 4 vols.	45
Handbuch der Physik. Berlin, Springer.	45
Theory of plasma waves. T. H. Stix. New York, 1962.	41
Plasma physics and the problems of controlled thermonuclear synthesis, ed. by K. D Sinelnikov. Kiev, 1962. (In Russian. Translation available as report AEC-tr-6396.)	28
Waves in anisotropic plasmas. W. P. Allis, B. Buchsbaum and A. Bers. Cambridge (Mass.), MIT Press, 1963.	24
Propagation of electromagnetic waves in plasma. V. L. Ginzburg. Moscow, 1960. (There is a translation by J. B. Sykes and R. J. Tayler, Pergamon Press, 1964.)	29
Basic data of plasma physics. S. C. Brown. New York, 1959.	25
The plasma dispersion function. B. D. Fried and S. D. Conte. New York, Academic Press, 1961.	22
The characteristics of electrical discharge in magnetic fields, ed. by A. Guthrie and R. K. Wakerling. New York, McGraw-Hill, 1949.	32

(4) *Conferences*

In 7.8 per cent of the citations (907) were to the proceedings of conferences, symposia and other meetings. One hundred and fifty individual conferences were cited in the sample. Only five conferences accounted for 616 citations, or 68 per cent of the total citations to conferences, and these are listed in Table 7.

TABLE 7. *Conferences cited more than twenty times*

Proc. conference on plasma physics and controlled thermonuclear fusion research. Salzburg, 1961	248
Proc. second international conference on the peaceful uses of atomic energy. Geneva, 1958	114
Proc. sixth international conference on ionisation phenomena in gases. Orsay, Paris, 1963	113
Proc. fifth international conference on ionisation phenomena in gases. Munich, 1961	84
Proc. fourth international conference on ionisation phenomena in gases. Uppsala, 1959	57

(5) *Reports*

Only 5.9 per cent of the total citations were to reports, although the organization of the report literature figures largely in the work of many libraries serving workers in the plasma physics field. It is worth while to consider what factors may have caused this low citation rate.

One possibility relates to the originating sample of source items that may have biased the results. It has been observed that authors writing in a particular journal tend to cite papers published in that journal rather more than those in other journals ('journal self-citation'). This is probably a manifestation of nothing more arcane than that (1) scientists tend to read the journals in which they publish, and (2) there are specialist journals. Perhaps this behaviour extends into the *form* of publication, and so that there may exist a sub-culture of authors who read and cite reports. This hypothesis had not been investigated. If there were any foundation in it, then the fact that only sixteen of the total 1,026 source items were from the report literature may have had some small effect on the result.

The small number of citations classed as 'private communications' and 'to be published' could well refer to reports of limited circulation.

Another conjecture is concerned with the relative time of entry of materials into the information network. It may be that reports play a larger part in describing new work than is indicated by the figures given here, but that by the time an author cites material, which he first learnt of from a report, the work has been more formally published in a journal, and it is this reference that he cites.* Again, it is not possible to assess this hypothesis with the data presented here. However, those who have handled citations in studies of this nature will probably confirm the opinion that the carelessness in citation practice exhibited by a large number of scientists would not suggest that they would take excessive trouble to check whether there existed an earlier or later citation to basically the same material. In most cases an author would probably cite the one which he remembered best.

In Table 8 are presented the report series to which twenty or more citations were made.

TABLE 8. *Reports series cited more than twenty times*

UKAEA Laboratories (AERE, Harwell and Culham)	61
USAEC supported laboratories:	
Oak Ridge and Los Alamos	46
Princeton	56
Lawrence Radiation Laboratory	33
Stanford University	47
Institute of Plasma Physics, Nagoya	26
Institut fur Plasmaphysik, Garching	20

(6) *Theses and Data Tables*

These two classes accounted for a small proportion of the total literature cited (0.9 per cent and 0.5 per cent respectively).

Only six theses were cited more than once, the maximum number of citations to any one thesis being six. The universities to which these theses were presented were widely distributed through the United States and Europe (with one Australian). No particular academic institution was responsible for a significant proportion of the theses, the highest number (six) came from the MIT.

The tables cited were mainly of mathematical functions; no particular table was cited more than four times.

(7) *Nuclear Science Abstracts*

This abstract journal also covers the plasma physics literature, and unlike *Physics Abstracts* includes abstracts of a wide range of report literature. Counts

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* Editorial policy for some journals demands this.

FIG. 1. *Citations to forms of publications.*

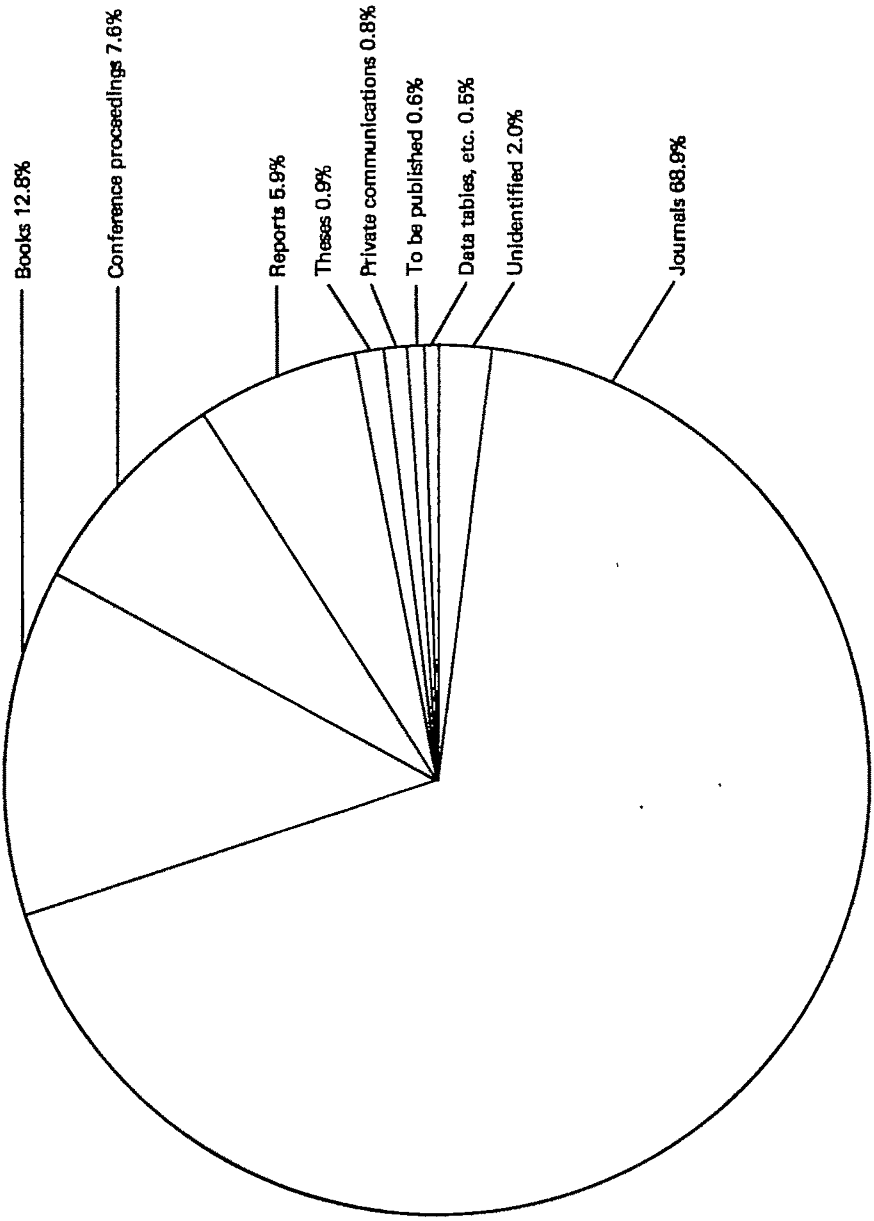


FIG. 2. *Percentage of journal citations against cumulative number of journals.*

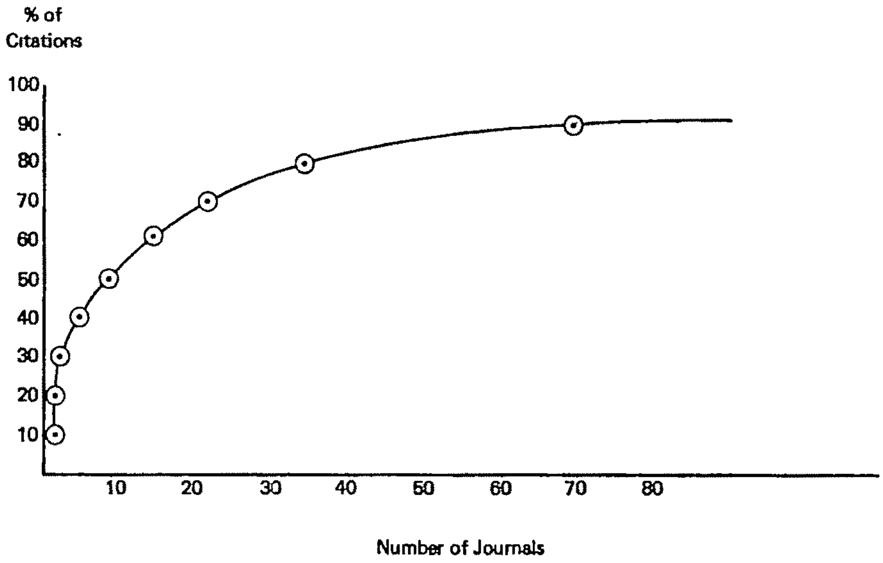
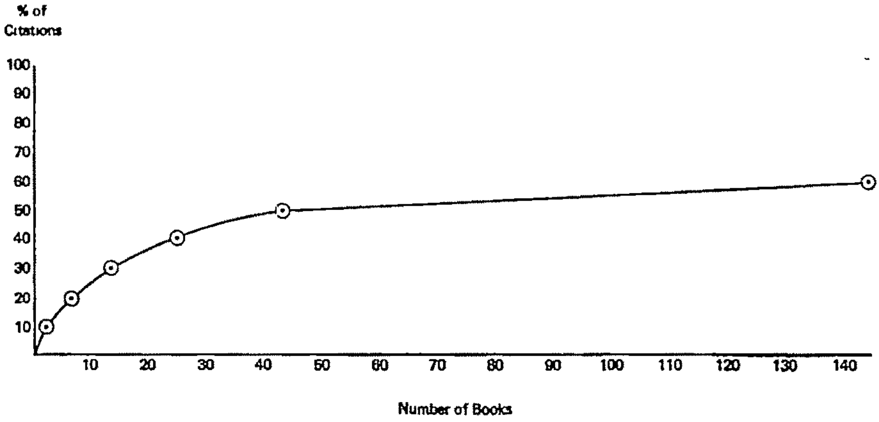


FIG. 3. *Percentage of book citations against cumulative number of books.*



were made of abstracts in the section names 'Plasma Physics and Thermonuclear Processes'. This is not strictly comparable with the 'plasma' section of *Physics Abstracts* since material on thermonuclear processes is in the latter placed under the heading 'Thermonuclear reactions—Nuclear fusion', and this was not included in the main count. With these reservations in mind the following table is presented:

TABLE 9

No. of abstracts (1965)

	Journals	*Reports*	*Conferences*	*Books*	*Theses*	*Patents*
Physics Abstracts: 'Plasma'	985	16	15	10	—	—
Nuclear Science Abstracts: 'Plasma Physics and Thermonuclear processes'	1346	542	168	84	49	34

The authors would like to thank Mrs E. Thom and Mr R. Priest for their work in collecting and organizing the data used in this study.

Letter to the Editor

Dear Sir,

It may be of interest to your readers to consider the following short account of a method of developing terminologies for indexing collections of reprints and references held by research departments and teams in this Institute. The method combines in one system a number of features which have been dealt with in *Aslib Proceedings* and elsewhere recently.

The project is a method for:

(*a*) Formulating vocabularies for,
(*b*) setting up,
(*c*) using, and
(*d*) (hopefully) evaluating,

feature card indexes to growing collections of reprints and references maintained by research teams. (This letter deals only with objects (*a*) and (*b*).) As of January 1969, indexes have been set up in seven departments. These collections range in size from 1,000 to 3,000 items, but it is thought that the method will serve for collections up to 7,000 or larger. Four more are planned, and it is intended to install them eventually in all thirty-five departments of the Institute. In addition, the method will be used to index material generated by Institute staff during its ten years life, including (*a*) scientific publications, (*b*) popular publications, (*c*) unpublished reports.

Vocabularies are prepared in a series of twenty steps in three main phases. In phase A references are first arranged in a fixed order and numbered serially. The users underline the words on each card under which they wish that reference to be indexed, as in the system described by Shaw and Rothman (*J. Doc.,* 24 (3), September 1968, p. 159). Slips are typed, each bearing one underlined term and the number of the reference on which it occurs. Rolls of perforated slips are used which are separated and arranged in alphabetical order. The number of slips bearing each word is counted and the figure written on the top slip. A total figure is obtained for synonymous terms at this stage so far as possible without wasting too much time. The analysis of word frequency is similar to that described by Pickford in discussing the FAIR project (*Aslib Proceedings,* March 1967, p. 79).

In phase B a brief definition of the sphere of work of the user group is prepared. This is divided into facets, which become the headings for 6 to 10 schedules, into which the great majority of terms can readily be fitted. Schedules are attributed to each term by making the slips. Lists of the words in each schedule are then typed out together with their frequencies. The total frequency for all terms in each schedule is added up and a mathematical criterion is used to determine the approximate number of keywords each schedule should be divided into. The aim is that each keyword (i.e. feature card) should index 2 to 5 per cent of the collection, thus avoiding headings that index too many or too few references. Subgroups of the schedules are prepared by bringing the more closely related words together and giving each group a heading, which is the keyword.

Phase C consists in the clerical operations of typing the thesaurus and punching the feature cards. There are four lists in the usual thesaurus:

(*a*) Keywords only, arranged in schedules (facets).
(*b*) Keywords only, arranged alphabetically.
(*c*) Keywords and subsidiary terms (or descriptors, i.e. the terms underlined) arranged by schedule.
(*d*) Keywords and descriptors, arranged alphabetically, with descriptors cross-referenced to the keyword where they are to be indexed and searched.

Finally, the slips themselves are grouped into packets, each containing the descriptors under one keyword. As the slips also bear the numbers of the references on which the descriptors are underlined, these can be punched on the feature card bearing the particular keyword. This enables punching of feature cards to be completed much more rapidly than when references are punched one at a time. The Swiss 'Swifta' feature cards are used. They have a capacity of 3,500, are highly portable and convenient, and easily punched by a hand punch.

This system is applicable to any collection of references and is an operational procedure which, by a standard methodology, provides 'tailor-made' terminologies for different collections and different user groups. It derives indexing terminology from 'natural language' (i.e. words chosen from the existing collection) statistically, on the assumption that interests change gradually and the terminology will therefore remain correct for a considerable time. The work flow is designed, so far as possible, to fall into fixed, simple routines, most of which can be carried out by clerical staff with no special knowledge. The sorting and counting routines are equally capable of being handled by computer, having been designed with this also in view. In attributing natural language terms to schedules, and keywords, each term is attributed to one location only. (Otherwise the statistical count would be invalid and the user would be confused by multiple entries.) Cross-references can, however, be entered at a later stage after the keywords have been selected. The various departmental terminologies are organically related to each other, and the potential is therefore present for them to be merged, to provide an index terminology for a centralized index to the material in all the separate collections.

The analysis of the indexing problem which led to this method is essentially an operational research one. The entire work flow has been designed as a system in which each step reinforces the others. It offers numerous openings for extension, such as two-tier (general/specific) keyword lists, weighting rules derived from ranking underlined terms and many others. What has been described above has, however, been implemented and is considered by the users to serve their needs better than any other method available to them.

Readers who wish to receive a copy of a report on the methodology should write to the undersigned.

Yours faithfully,

S. COONEY.

The Agricultural Institute,
33 Merrion Road,
Dublin 4.
19th February 1969.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

*Items are available in the Aslib Library and may be borrowed unless marked * to indicate reference copies.*

User Studies

BALAZS, JÁNOS
A hálózatközi együttmuködés tapasztalatai a matematikai, a fizikai és a kemiai szakirodalom gyujtésében.
Tudományos és Müszaki Tájékoztatás, vol.15, no.11–12, November–December 1968, p.797–810.
Experiences of co-operation among library-networks in acquiring literature in mathematics, physics and chemistry.

GITTIG, HEINZ
Der Leihverkehr der Deutschen Demokratischen Republik unter besonderer Berucksichtigung der Stellung der Deutschen Staatsbibliothek Berlin.
Zentralblatt für Bibliothekswesen, vol.82, no.12, December 1968, p.705–14.
An analysis of inter-library lending and its efficiency in East Germany, particularly in connection with the German State Library, Berlin.

Library Systems

GRABNER, BERND
Zur Kontrolle der Wirksamker von Literaturinformation.
ZIID Zeitschrift, vol.15, no.6, December 1968, p.272–5.
Describes a mathematical system for evaluating information efficiency based on users' opinions.

Administration and Management

FELKL, FELIX
Zur Anwendung moderner Organisationsmittel in der Informationsarbeit.
ZIID Zeitschrift, vol.15, no.6, December 1968, p.269–71.
Describes the applicability of modern management tools, such as magnetic charts and tape recorders, to documentation work.

ZABAVSKII, M. A.
Praktika organizatsii, normirovaniya i planirovaniya raboty inzhenera-kuratora ONTI NII.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.9, 1968, p.15–17.
Organization, work-scheduling and planning of the work of the information department supervisor.

SCHWARZ, GERHARD, *and* MEISTER, HANS-JOACHIM
Moglichkeiten fur die Modernisierung der materiell-technischen Basis der Bibliotheken.
Zentralblatt fur Bibliothekswesen, vol.83, no.1, January 1969, p.3–16.
Paper given at the 3rd International conference on the construction, furnishings and equipment of libraries, Sofia, 16–20th September 1968.
Possibilities of applying modern technical devices to library processes, acquisition, cataloguing, etc.

BOSE, H.
A new process for acquisition work.
IASLIC Bulletin, vol.13, no.3, September 1968, p.219–21.
A system of checking which avoids duplication.

ASTHANA, P. N.
Stock-taking in libraries.
IASLIC Bulletin, vol.13, no.3, September 1968, p.222–7.

*DEWE, MICHAEL
Library supply agencies in Europe.
[London], Library Association, 1968
SBN 85305 480 8.
205 p., illus., diagrs.

REYNOLDS, J. D.
The future of library buildings: a feasibility study for a research project.
London, L.A. London and Home Counties Branch, 1968.
36 p.

SCHILD, JOHANNES
Zur Problematik und Methodik der Planung von Bibliotheksbauten an Universitäten und Hochschulen.
Zentralblatt für Bibliothekswesen, vol.83, no.1, January 1969, p.16–22.
Paper read at the 3rd International conference on the construction, furnishings and equipment of libraries, Sofia 16–20th September 1968.
The problems of and methods used in planning university library buildings.

KUT, DAVID
Integrated ducting: critique of projected installation for University of Leicester Library.
Architects' Journal, 5 February 1969, p.391–4.
Describes the design of the structure-integrated air-conditioning system at the University of Leicester Library.

AIR conditioning for preserving documents. *Heating and Ventilating Engineer,* vol.42, November 1968, p.253–4.
Brief details of the installation controlling temperature and humidity in the new Orbit House repository of India Office Records, under the Commonwealth Relations Office.

COLLISON, ROBERT L.
Commercial and industrial records storage. London, Ernest Benn; New York, John de Graff, 1969.
183 p., illus.

Reprography

KLOSA, JOSEF
Die automatisierte Lichtpauserei—eine Zukunftsvision oder greifbare Realitat? *Reprographie,* vol.9, no.1, January 1969, p.5–7.
Time costs and personnel can be rationalized in photocopying, by automation of the document setting-up process and sizing of the copy paper.

BOCEK, KARIN
Einfuhrung der Planfilmtechnik im Wissenschaftlich—Technischen Zentrum Automobilbau. *ZIID Zeitschrift,* vol.15, no.6, December 1968, p.265–8.
Describes a system of storing documents on microcards.

MULLER, HERBERT E.
Mikrofilm—Vervielfaltigung mit Ozalid—Duplizierfilmen. *Reprographie,* vol.9, no.1, January 1969, p.9–15.
Describes the process of microfilm duplication using Ozalid SM, DM and GM duplicating film.

Printing and Publishing

COOPER, D. L., *and* NIELD, C. D.
An analysis of computer typesetting systems in the U.K. Leatherhead, PIRA, 1968.
23 p., diagrs. (PIRA Report.)

STANDARD BOOK NUMBERING AGENCY
Standard book numbering: incorporating the recommendations of the Publishers Association for implementing the Standard Book Numbering scheme; 2nd rev. ed. London, The Agency, 1968.
SBN 949999 01 6.
10 p.

ZENTRALSTELLE FUR MASCHINELLE DOKUMENTATION
SBN—SSN Nummerierung von Publikationen. Frankfurt-am-Main, Zentralstelle fur Maschinelle Dokumentation, 1969.
15 p. (ZMD-D-8.)

UNESCO
Guide for the preparation of scientific papers for publication. Paris, Unesco, 1968.
7 p. (SC/MD/5.)

BRITISH ASSOCIATION FOR COMMERCIAL AND INDUSTRIAL EDUCATION
Report writing; 2nd ed. rev. and enl., prepared by P. J. C. Perry. London, the Association [1969?].
24 p., illus., bibliog.

BARKER, RONALD E.
Copyright at the crossroads. *Bookseller,* 1 February 1969, p.358–60, 362.
The international copyright situation.

MENTHA, BÉNIGNE
L'organisation mondiale du droit d'auteur. Un problème de co-existence. *Revue Internationale du Droit d'Auteur,* no.59, January 1969, p.3–51.
The background of world copyright agreements and the present situation with regard to them.

Subject Organization

JOHNS, ADA WINIFRED
Special libraries: development of the concept, their organizations, and their services. Metuchen, NJ, Scarecrow Press, Inc., 1968.
x, 245 p.

KAIM, A.
Activitatea de informare şi documentare in uzina 'Carbochim'—Cluj. *Probleme de Documentare şi Informare,* vol.2, no.12, December 1968, p.800–11.
Information and documentation work at the Carbochim factory, Cluj.

MULLIS, A. A.
The Law Commission Library. *Bulletin of the Circle of State Librarians,* vol. 17, no.1, January 1969, p.8–11.
A description of the recently established Library.

ARCHIMBAUD, J.
La nouvelle section de médecine et de pharmacie de la Bibliotheque Universitaire de Clermont-Ferrand. *Bulletin des Bibliothèques de France,* vol.13, no.12, December 1968, p.519–30.

ROYAL INSTITUTE OF BRITISH ARCHITECTS
The organisation of information in the construction industry: Jack Mills describes the use of CI/SfB for general information and Wilfred McCann writes on the use of SfB for project information. London, the Institute, 1968.
38 p., diagrs. (SfB Agency UK Development Paper No. 3.)

WERNER, HANS
Branschriktad byggdokumentation—frågeindustri under utveckling. *Tidskrift för Dokumentation,* vol. 24, no.6,

1968, p.83–9.
Describes the functions of the Institute for Building Documentation, Stockholm.

KING, M.
Report on the operation of the MEDLARS Service in the Newcastle region from 1966 to 1968. Newcastle upon Tyne, University of Newcastle upon Tyne, 1969.
(xii), 53 p.

AUSTIN, CHARLES J.
Medlars 1963–1967. Bethesda, Md, National Library of Medicine, 1968.
viii, 76 p., illus.

MARSHALL, K. E.
Periodical citations in the recent literature of freshwater and fisheries biology. Winnipeg, Fisheries Research Board of Canada, Freshwater Institute, 1968.
67 p., tables. (FRB Tech. Rep. 90.)
Detailed analysis of citations in five limnology journals.

LIM, HONG TOO
Index coverage of Singapore and Malaysian medical journals.
Perpustakaan, vol.2, no.2, October 1967, p.251–8.
Study at Medical Library, University of Singapore, to ascertain coverage of twenty journals by eight international indexes, which it concludes to be unsatisfactory.

WALFORD, A. J., *ed.*
Guide to reference material. 2nd ed. vol.II. Philosophy and psychology, religion, social sciences, geography, biography and history. Assistant editors, A. L. Smyth and C. A. Toase. London, Library Association, 1968.
vii, 543 p.

*ROYAL INSTITUTE OF BRITISH ARCHITECTS
CI/SfB classified list of essential references. London, The Institute, 1968.
40 p.

Mechanization

CAYLESS, C. F., *and* POTTS, HILARY, *comp.*
Bibliography of library automation, 1964–1967. [London], Council of the British National Bibliography, 1968.
SBN 900 200 007.
107 p.

LINGENBERG, WALTER
Computereinsatz in Bibliotheken der Bundesrepublik Deutschland.
Zeitschrift für Bibliothekswesen und Bibliographie, vol.16, no.1, 1969, p.1–23.
A report on the state of library automation in West Germany, with particular emphasis on data processing. An appendix by G. Pflug lists current projects in individual libraries.

AYRES, F. H., *and others*
AMCOS (Aldermaston Mechanised Cataloguing and Ordering System), 3rd report: a new approach to the physical format of the printed catalogue, by F H. Ayres, Janice German, N. Loukes and R H. Searle.
Aldermaston, United Kingdom Atomic Energy Authority. Atomic Weapons Research Establishment, 1969.
7 p. (AWRE Library Information note, no.69/1.)

BURGESS, T., *and* AMES, L.
LOLA—Library on line acquisitions subsystem. Pullman, Wash., Washington State University, July 1968.
74 p. (PB 179 892.)
2 microfiches.

LINE, MAURICE B.
White elephants revisited.
Catalogue and Index, no.13, January 1969, p.4–6.
The use of minimal records and computers to make library catalogues more accessible.

DEWS, J. D., *and* SMETHURST, J M.
The Institutes of Education Union list of periodicals processing system. Newcastle upon Tyne, Oriel Press, 1969.
39 p. (Symplegades, no.1.)

D'OLIER, J.
Traitement sur calculateur du fichier des revues periodiques.
A.N.R.T. Information et Documentation, no. 9, 15 December 1968, p.18–28.
Mechanized handling of periodicals.

SCHIFF, ERVIN
Lyukszalagkártya alkalmazása a tájékoztatási munkában.
Tudományos és Müszaki Tájékoztatás, vol.16, no.1, January 1969, p.35–47.
The punched tape card combines the advantages of punched cards with those of punched tape.

ZENTRALSTELLE FUR MASCHINELLE DOKUMENTATION
Protypen als Intermedien fur Sonderbuchstaben und Sonderzeichen bei der Datenerfassung, by Klaus Schneider. Berlin, etc., Beuth-Vertrieb GMBH, 1968.
33 p., tables. (ZMD-A-12.)
Possible methods of representing diacritic signs and symbols in data collection on usual machines used.

Classification and Cataloguing

COLUMBIA UNIVERSITY—School of Library Science
The Dewey decimal classification: outlines and papers presented at a workshop on the Teaching of Classification, December 8–10, 1966; edited by Maurice F. Tauber, Carlyle J. Farey [*and*] Nathalie C Batts. New York, the School, 1968.
vi, 121 p.

BRITISH STANDARDS INSTITUTION
Universal decimal classification; English full edition, 4th international edition 656/656.7 Transport services, traffic organization and control. London, the Institution, 1968.
23 p. (BS 1000 [656/656.7] FID Publication no. 179.)

NISHIO, SHIGEHISA
Organic compounds and the UDC.
Dokumentesyon Kenkyu, vol.18, no.11, 1968, p.348–59.
Structure diagrams and UDC numbers for various chemical compounds.

INTERNATIONAL COUNCIL FOR BUILDING RESEARCH
Information flow in the building process—classification and coding for computer use. Oslo, Norwegian Building Research Institute, 1968.
Var. pag., diagrs.
An International Symposium held in Oslo, 17th–19th June 1968.

BABICZKY, BÉLA
Speciális osztályozási rendszerek.
Tudományos és Müszaki Tájékoztatás, vol.15, no.11–12, November–December 1968, p.852–7.
Classification schemes for automation and for welding.

SCHIMINOVICH, S., *and* LIEBERMAN, N.
A clustering experiment: first step towards a computer-generated classification scheme. New York, American Institute of Physics, April 1968.
43 p. (PB 178 370.)
1 microfiche.

DOWNING, J. C.
A national cataloguing policy.
Catalogue and Index, no.13, January 1969, p.1, 16.
Extracts from an address given at the London Seminar on the implementation of the Anglo-American Cataloguing Rules, October 1968. The possibility of a national cataloguing policy is strengthened by the appearance of the Anglo-American Cataloguing Rules.

BRALL, ARTHUR
Anwendung und Abwandlung der Sachkatalogisierungsmethode Eppelsheimers an deutschen Bibliotheken, mit einem Anhang von Materialien. Köln, Greven Verlag, 1968.
liii, 147 p. (Arbeiten aus dem Bibliothekar-Lehrinstitut des Landes Nordrhein-Westfalen, 31.)

MIHAILOVA, ISKVA
Gedruckte Zeitschriftengesamtkataloge.
Zentralblatt fur Bibliothekswesen, vol.82, no.12, December 1968, p.715–32.
An investigation into twelve representative union catalogues of periodicals with suggestions as to how formats can be adapted to users' needs.

BENENFELD, ALAN R.
Generation and encoding of the Project Intrex augmented catalog data base. Cambridge, Mass., Massachusetts Institute of Technology, 1968.
54 p., diagrs. (MIT Project DSR 70054.)

PROJECT INTREX semiannual activity report, 15 March to 15 September 1968.
Cambridge, Mass., Massachusetts Institute of Technology, 1968.
71 p., diagrs. (PR—6.)

Language and Indexing

SOERGEL, DAGOBERT
Klassifikationssystem und Thesauri; eine Anleitung zur Herstellung von Klassifikationssystemen und Thesauri im Bereich der Dokumentation. Frankfurt, Deutsche Gesellschaft fur Dokumentation, 1969.
224 p., diagrs., tabs.

HAMMOND, WILLIAM
Construction of the NASA thesaurus: computer processing report.
Maclean, Va, Aries Corporation, 1968.
Var. pag., diagrs. (N68—28811.) $3.

ANGELL, RICHARD S.
Two papers on thesaurus construction: (*a*) the language of term relation designations in subject access vocabularies, (*b*) the specific-to-general see reference in thesaurus construction.
In
FEDERATION INTERNATIONALE DE DOCUMENTATION
Committee on Classification Research Reports . . . 1968. 27 p. (FID/CR Report no.8.)

TÓTH, ISTVÁN ANDRÁS
Deszkriptoros, koordinált index—rendszeru informácio—viszszakeresés uniterm—és fénylyukkártyán a husipari muszaki könyvtárhálózatban.
Tudományos és Muszaki Tájékoztatás, vol.15, no.10, October 1968, p.734–48.
Development of a thesaurus for a peek-a-boo indexing system in the meat industry.

WOLFF-TERROINE, M., *and others*
Use of a computer for compiling and holding a medical thesaurus.
Methods of Information in Medicine, vol.8, no.1, January 1969, p.34–40.
Project at Institut Gustave-Roussy, Service de Documentation Scientifique, Villejuif, France, in collaboration with Information fur Dokumentation, Information und Statistik am Deutschen Krebsforschungszenbrum, Heidelberg, to produce cancer thesaurus.

FICHTE, BERND, *and* BAUER, GERD
Der Fachthesaurus Siliciumorganische Chemie als integrierbarer. Bestandteil eines Thesaurussystems Chemie.
ZIID Zeitschrift, vol.15, no.6, December 1968, p. 259–64.
Construction of a special thesaurus for silicon organic chemistry, Berlin, with the idea of future integration in a more general chemical scheme.

BAKER, F. T., *and* WILLIAMS, J. H.
Research on automatic classification indexing and extracting, FRQNCY: a general-purpose frequency program. Gaithersburg, Md, IBM Federal Systems Division, August 1968.
52 p. (AD 673 428.)
2 microfiches.
A programme designed for counting strings of character-oriented data, written in Fortran IV language, and run on the IBM System/360.

WESSEL, ANDREW E.
Some thoughts on machine indexing.
[Santa Monica, Calif., Rand Corporation], 1968.
11 p. (AD 671 989.)

NUYL, TH. W. TE
Examination of the validity of the conclusions arrived at in the Aslib Cranfield research project.
In
FEDERATION INTERNATIONALE DE DOCUMENTATION
Committee on Classification Research Reports . . . 1968. 25 p. (FID/CR Report no.7.)

SCHIFF, ERVIN
Egy permutaciós index-modell deszkriptoralkotási szabályai.
Tudományos és Muszaki Tájékoztatás, vol.15, no.11–12, November–December 1968, p. 845–50.
A model of a Hungarian-language permuted index was prepared by constructing chains of co-ordinated free descriptors.

LODDER, MARGARET
A current awareness service based on the keyword-in-context (KWIC) indexing system.
South African Journal of Science, vol.64, no.5, 1968, p.228–34.
KWIC system serving the CSIR's National Institute for Water Research is described.

COOK-RADMORE, D. A. J.
Indexes of translators.
Incorporated Linguist, vol.8, no.1, January 1969, p.13–15.
A survey of three recent Indexes. Discusses lack of competence of some translators in the wide range of subjects and languages they claim to cover.

Information Processing and Systems

SICKING, L. M. C. J., *and* WALDEN, B. V. de G.
Automatic literature processing. Amsterdam, IAG, 1968.
56 p., bibliog. (IAG—occasional publication, no.2.)
Bibliography of 359 references.

DDC bibliography on optical or graphic information processing (information sciences series). Volume 1.
Alexandria, Va, Defense Documentation Center, September 1968.
229 p. (AD 674 025.)
4 microfiches.

PIETRZYK, ALFRED, *and others*
File management techniques and systems with applications to information retrieval—a selective bibliography compiled by Alfred Pietrzyk, Frances Lamberts and Robert R. Freeman. Washington, DC, Center for Applied Linguistics, 1968.
27 p. (PB 178 792.)

OCKERMAN, LYNN, *and others, eds.*
Selected mechanized scientific and technical information systems. Washington, DC, Herner & Co., April 1968.
153 p. (PB 179 658.)
3 microfiches.

PFEFFER, HAROLD
Information retrieval among examining patent offices.
Special Libraries, vol.59, no.5, May–June 1968, p.330–6.
The organization and programme of ICIREPAT.

MUKOPADHAYAY, A.
Current-awareness-service through mechanized system: a case study.
IASLIC Bulletin, vol.13, no.3, September 1968, p.193–203.

WOODS, BILL M.
Information system development: phase 1. Management planning. New York, Engineering Index, Inc., 1968.
55 p. (PB 178 753.)

CHASEN, LAWRENCE I.
Availability of information and means of transfer. Philadelphia, Pa, General Electric Co., Missile and Space Division, 1968.
14 p. (AD 674 253.)
1 microfiche.

TELL, BJORN, *and others*
Litteratursokning med generellt ABD—system. Översikt av ABACUS andra fas: sokdelen.
Tidskrift for Dokumentation, vol.24, no.6, 1968, p.89–94.
Describes part 2, the search phase, of the ABACUS computerized information retrieval system.

RATTET, LANA S., *and* GOLDSTEIN, J H.
Computerizing scientific bibliographies.
Journal of Chemical Education, vol.45, no.11, November 1968, p.734-6.
Use of IBM 1620–II computer to store and retrieve literature on C–H satellite NMR spectra using SPS II–D language.

SMETANA, FREDERICK O., *and* PHILLIPS, DENNIS M.
Results of an experimental program to provide low cost computer searches of the NASA information file to university graduate students in the Southeast. Research Triangle Park, N. Carolina, North Carolina Science & Technology Research Center, 1968.
113 p., tables. (Technical Report no.103.)

MORRISON, DONALD R.
PATRICIA—practical algorithm to retrieve information coded in alphanumeric.
Journal of the Association for Computing Machinery, vol.15, no.4, October 1968, p.514–34.

SAMMON, JOHN W.
Some mathematics of information storage and retrieval. Technical report no. RADC-TR-68-178. Griffiss AFB, NY, Rome Air Development Center, June 1968.
34 p. (AD 673 362.)
1 microfiche.

Communication and Knowledge

BARINOVA, Z. B., *and others*
Investigation of scientific journals as communication channels. Appraising the contribution of individual countries to the world scientific information flow. Washington, DC, Joint Publications Research Service, 1968.
12 p. (PB 178 666T.)
Originally published in *Nauchno-Tekhnicheskaya Informatsiya,* seriya 2, no.12, 1967, p.3–11.

Professional Activity

MIKHAILOV, A. I., *and others*
The development of informatics in the U.S.S.R. Washington, DC, Joint Publications Research Service, 1968.
6 p. (PB 178 665.)
Originally published in Russian in *Nauchno-Tekhnicheskaya Informatsiya,* seriya 2, no.11, 1967, p.3–18.

EDWARDS, TOM
Library and Information Science Abstracts: a new service for librarians and documentalists.
Library Association Record, vol.71, no.2, February 1969, p.41–3.

*LIBRARY ASSOCIATION
Five years work in librarianship, 1961–1965, edited ... by P. H. Sewell ... London, the Association, 1968.
vii, 956 p., bibliogs.

SPECIAL LIBRARIES ASSOCIATION. Education Committee
Continuing education for special librarianship . . . Where do we go from here? Los Angeles, the Committee, 1968.
56 p.
Proceedings of a planning session held on 2nd June 1968 in conjunction with the SLA annual conference in Los Angeles. Chairman Margaret N. Sloane.

ANDERSSON, CHRISTINA M., *and others*
FKI—utbildningen 1967–68.
Biblioteksbladet, vol 54, no.1, 1969, p.28–32.
Swedish library education, investigation of practical work of students in different educational libraries.

KAUL, B. K.
Special library and recruiting.
IASLIC Bulletin, vol.13, no.3, September 1968, p.213–18.

GATES, JEAN KEY
Introduction to librarianship. New York, etc., McGraw-Hill Book Co., 1968.
415 p., bibliog. (McGraw-Hill Series in Library Education.)

STOKES, ROY
The function of bibliography.
London, Deutsch, 1969. SBN 233 96012 0.
174 p.

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RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineering. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

WILFRED E. GOODAY, ARSM, DIC, C.ENG, MIMM, FIL. Member of Translators' Guild, Romanian and French. 161 Rivermead Court, London SW6. RENown 1912.

TECHNICAL TRANSLATIONS from Russian, German and Polish into English. B. Klipstein, B SC(HONS), 1 Glenview Grove, Shipley, Yorkshire. Tel. Shipley 58215.

TECHNICAL AND COMMERCIAL translations from English into Russian. Mrs O. Linsley, 31 Parke Road, Barnes, London SW13. Tel. 01-748 8822.

TECHNICAL TRANSLATIONS from Japanese into English. R. A. Scutt, BA, 48 Somerset Avenue, West Wimbledon, London SW20. Tel. WIMbledon 1713 (01-946 1713).

RUSSIAN TO ENGLISH TRANSLATIONS. Physical sciences, all industries. Fast service. Ceramics and high temperatures specialities. Kenneth Shaw, c/o CIS Ltd, Churston End, Copythorne Road, Brixham, Devon. Tel. Brixham 3221.

TRANSLATIONS: TECHNICAL, SCIENTIFIC, all west-European languages. J. Smuts, B SC (ENGINEERING), FIL, 12 Thorndene Avenue, London N11. Tel. 01-360 7723.

TECHNICAL OR COMMERCIAL translations into/from English, German, Dutch and French. A. M. H. Speller, FIL, NGV, 6 Lakeside, West Ealing, London W13. Tel. 01-998 1045.

TECHNICAL TRANSLATIONS. Spanish, French, German, Portuguese, camera copy or printed. E. W. Sykes, FIL, 39 West Close, Wembley Park, Middlesex. Tel. 01-904 4273.

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The Chemical Society, acting as Agents for the U.K. Consortium on Chemical Information, is planning to establish, probably at Nottingham, a Centre for the mechanised handling of chemical information. The existing Chemical Society Research Unit for Information Dissemination and Retrieval will form the Research Section of the new centre. The initial purpose of the centre will be the exploitation and marketing in the British Isles of the information contained in the computer-based data files created by the Chemical Abstracts Service of the American Chemical Society.

The Society will therefore shortly proceed to the appointment of

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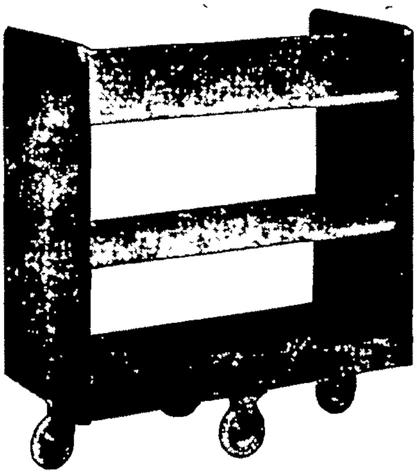

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 21 **May 1969** **Number 5**

ASLIB CALENDAR 1969

May

WED.28.	Evening Meeting at Aslib. Scientific and technical library services in Czechoslovakia, by G. H. Wright.

June

WED.4.	Annual General Meeting at Aslib at 11.45 a.m.
THU.12.	Engineering Group. Visit to Imperial Metal Industries Ltd, Kynoch Works, Witton, Birmingham 6.
TUE.17 – THU.19.	Chemical Group. Polymer technology course, Loughborough.
FRI.27 – SUN.29.	Electronics Group. Annual Conference. Westcliff.

September

SUN.21 – WED.24.	43rd Annual Conference, University of Warwick, Coventry.

October

TUE.28 – THU.30.	Aslib/Construction Industry Research and Information Association. Joint Conference, Leamington Spa.

Aslib's Committees

For some time the Council has had under review the Committee structure of Aslib, so as to ensure that Aslib's policy-making machinery is kept equal to the demands exerted by growth and change in the situation of information services in the country. The principal change which has been decided upon is the establishment of a range of technical committees which will be appointed by the Council and will have the task of keeping under review a particular sector of the field such as indexing languages, the planning of information systems, mechanization, manpower and education and training requirements, and the relations between information services and various other specialist groups. It is hoped that these committees will help towards the formulation of Aslib policies where necessary in these sectors, and that they will also provide a mechanism for focusing needs and channelling ideas for useful work, e.g. a new publication, a conference, a training course or a research project.

A further useful step is the extension of the membership of the International Relations Committee to include the nominees of 'not more than eight corporate members of Aslib to be selected by Council from among non-profit-distributing organizations of national standing with a known interest in international information activities'. To date, the organizations which have accepted an invitation to nominate a representative are the Royal Society, the Chemical Society (on behalf of the new Chemical Information Consortium), the Institution of Electrical Engineers (on behalf of INSPEC), the National Computing Centre, the Library Association and the British Standards Institution. The two latter are a long-standing arrangement and OSTI, of course, has a permanent observer on the committee. It is hoped that the extended committee will be able to make a broadly 'national' representation, especially in FID affairs, and also ensure an effective flow of information about international information plans and developments among the principal interested bodies.

Branch and Group committees will, of course, continue to be responsible for their own programmes, and there will continue to be an Aslib Annual Conference Committee and a Meetings Committee.

Midlands Regional Office of Aslib

Aslib's first regional office is to be opened this year, in Birmingham. It will form part of a joint information and advisory centre to be established by the Constructional Industries Research and Information Association, Aslib, and a number of other organizations at the Engineering and Building Centre in Broad Street. It is expected that the joint centre will be opened by the Minister of Public Building and Works, probably in June.

The Council hopes that the new office will be able to play a substantial part in the furtherance of Aslib's aims in the Midlands and in the development of the activities of the Midlands Branch.

Annual General Meeting

The attention of members is drawn to the fact that the Annual General

Meeting of Aslib will be held on Wednesday 4th June 1969. All details of arrangements and the Agenda and Annual Report for 1968 are being circulated separately.

Institute of Metals—Spring Meeting

One day of the Institute of Metals Spring Meeting (Thursday 13th March) was devoted to a discussion on 'How do you find out about Metals?'. This provided a useful opportunity for Mr B. C. Vickery to present a brief summary of the results of the recently completed survey on Metals Information in Britain. During the remainder of the morning several prepared contributions were presented by metallurgists from industry and from universities. The viewpoint of the information worker was presented by Mr J. J. McGlynn of BNFMRA, Mr C. Johnson of High Duty Alloys Ltd and Mr F. Liebesny of British Aluminium Co. Ltd. The final address was by Mr J. C. Gray of OSTI. Both sides presented a variety of answers to the question posed by the conference theme, and the discussion sessions maintained a high level of interest throughout the day.

European Chemical News—Index 1968

Some years ago Dr Lynch (*J. Doc.* **22**, 1966, p. 167–85) developed a technique for producing subject indexes similar to those in *Chemical Abstracts* by computer articulation of constituent parts of an indexing expression. The first example of such an index, for a commercial periodical, the ECN, has just been produced by using computer programs developed by International Data Highways.

In the introduction to the Index it is pointed out that 'the indexer today has merely to write out one or more descriptive phrases, indicating those which he wants to appear as headings in the index, and the computer does the rest, producing a number of entries in the index from each phrase, arranging them in the most useful way, and finally producing film from which the completed index can be produced'. Thus, for example, the indexing statement for an item of ECN (no. 314, p. 34) is:

> Catalysts for hydrogenators of acrylic acid, maleic acid and crotonic acid by Johnson Mathey.

The indexer indicated four entry points and by computer algorithm the flagged machine-readable input automatically provides the following entries:

(*a*) Acrylic acid
  maleic acid, hydrogenators of, and crotonic acid by J. M., catalysts for,

(*b*) Crotonic acid, by J. M., catalysts for hydrogenators of acrylic acid, maleic acid and,

(*c*) Johnson Mathey, catalysts for hydrogenators of acrylic acid, maleic acid and crotonic acid by,

(*d*) Maleic acid, acrylic acid—, hydrogenators of, and crotonic acid by J. M., catalysts for, A paper reporting on the programming and practical details involved has appeared in *Program.**

DES Developments

The Department of Education and Science has had a number of sections concerned with libraries and information work. It has been announced that these responsibilities will now be brought together in a Libraries and Information Systems Branch. Dr H. T. Hookway has been appointed Under Secretary and will take charge of the new Branch.

OSTI

The Office for Scientific and Technical Information of the Department of Education and Science has moved from State House. The new address is:

Office for Scientific & Technical Information,
Elizabeth House,
39 York Road,
London SE1. Telephone: 01–928 9222.

Conservation of Library Materials

The Council on Library Resources of Washington, DC, has provided a grant to the Imperial College of Science and Technology over the next three years for research on the scientific aspects of this serious problem. In close association with the Royal College of Art investigations will include methods of restoration and the construction of books; strengthening and de-acidifying in bulk of the paper of post-1840 books to counter the accumulated effects of air pollution and the highly acid papers used in that period (extending the pioneer work of W. J. Barrow); effects of bleaching and fungicides; the use of adhesives and techniques of resizing.

Chicago Graduate Library School. Annual Conference

This 34th Conference, which will take place from 4th to 6th August, has as its theme the 'Deterioration and preservation of library materials'. The following topics will have special interest for documentalists: the nature of paper and the promise and performance of alkaline printing papers; problems in preserving photographs, photographic films and microforms, and environmental factors affecting the permanence of library materials.

Courses in Information Science at the City University, London

The first M.Sc. degrees given in Information Science in the United Kingdom were awarded last November to nine students at City University for the year

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* Townley, Helen. A new computer-based current awareness service. *Program,* 3, 1969, p. 1–10.

1967–8. Each student must submit a thesis which is either a report on a piece of research or a state-of-the-art survey. Three students chose the following research themes: The flow of information in small firms, Information flow in the construction industry (with particular reference to the architectural profession), and The parametric description of retrieval tests (published in the *Journal of Documentation,* **25**, 1969, p. 1–27 and to be continued in the June issue). In the current year 1968–9 the number of students on this course has increased to seventeen.

The Diploma Course (two-year, part-time evening) is to be replaced next October by a two-year day-release course which will provide 50 per cent more time and this will allow of adequate practical work. With this enhancement of the course, the City University has approved of the establishment of a Diploma in Information Science. Entry qualifications will normally be a university degree in science, engineering, social science or economics. Non-graduates will be considered under special circumstances.

Basic Chemistry for Information Workers

The Aslib Chemical Group, in conjunction with the Chemistry Department of the Borough Polytechnic, London SE1, has arranged a special course to take place from 29th to 30th May. It has been designed for librarians and information workers involved in chemical and allied industries and aims to provide background information on pure and applied chemistry. Further details can be obtained from Dr H. C. Evans, Shell Research Ltd, Carrington Plastics Laboratory, Urmston, Manchester.

Management of Library Automation

The School of Library Studies of Queen's University, Belfast, has organized a three-day residential course from 24th to 26th June 1969. Successive days will be devoted to Computer basics, Planning for automation, Automation in action. One of the aims of the course is to place the application of computers to housekeeping operations in its proper management perspective. For further information write to Deputy Director, School of Library Studies, 2 College Gardens, Belfast BT9 6BQ.

Summer School of Librarianship, 1969

The Scottish Library Association is holding its Annual Summer School at Newbattle Abbey College from 5th to 11th July. The inaugural address 'Libraries in a technological age' will be given by Mr W. Ashworth, President of the Library Association. Sessions will be devoted to Computer applications in libraries and Progress in library research. For details apply to A. G. D. White, Blackhall Library, Hillhouse Road, Edinburgh 4.

BRIEF REVIEWS

CODLIN, E. M., *and* LAWRIE, R. S. Handlist of basic reference material for librarians and information officers in electrical and electronic engineering. London, Aslib Electronics Group, 1969. 49 p. 25*s*. (15*s* to members.)

With this fifth edition the handlist has been revised and updated. Although essentially similar to the fourth edition, it contains an additional section devoted to abstract journals. The 502 items listed include directories, dictionaries, handbooks, standards, tables and journal and book lists, covering a wide subject range, and forty-six special subject bibliographies on aspects of electrical and electronic engineering. A number of omissions are perhaps due to an attempt to be selective.

The items are concisely arranged with brief annotations, where applicable, in twelve sections. Ready access to the material is provided by an author index and a comprehensive subject index. The list should prove a useful tool for anyone with an interest in the electrical and electronic engineering field.

EAGLE, SELWYN, *ed.* Library resources in London and South-east England. London, the Library Association, Reference Special and Information Section, 1969. 380 p. 65*s*. (SBN 85365 100 0.)

This handbook, one of a series, consists of an alphabetical listing of libraries in London and South-east England, including the Oxford and the London University Colleges, compiled from answers to a questionnaire sent out in 1966, details of which are given.

Information includes the librarian's name, number of staff, opening hours, type of classification and catalogue arrangement used and the size of the book and periodical stock. The entries also indicate special subject collections and collections of other material such as filmstrips, paintings, records, newspaper cuttings, etc. An indication is also given of the services offered by the library and to whom these services are available. There is a full subject index and also a geographical index to the libraries, arranged by county.

This could be a useful guide to the library resources of London and South-east England, but the information given is more than a little out of date.

THE international directory of computer and information system services 1969. London, Europa Publications Ltd, 1969. 549 p. 90*s*. (SBN 90036 211 1.)

This directory of computer services has been compiled in Italy and would appear to give world-wide coverage. Most of the information is in English but some of the entries are in French. The directory is arranged alphabetically by country and then the computer installations are listed under categories such as brokers, consultants, government establishments and service bureaux. The latter are subdivided into those serving various areas, for example, banking, medicine, software and typesetting.

The details that are given of each computer installation usually include the names of the officers, type of computer, coding languages, services available and fields of application. Specialized subject areas of the companies are listed but unfortunately there is no index to these. The indexes at the end of the volume are only to the names of institutions and to the type of computer installed.

INTERNATIONAL Journal of Man-Machine Studies, v. 1, no. 1, January 1969. London and New York, Academic Press.

This new quarterly is edited from the Department of Electrical Engineering Science and, as its name indicates, it has an international Editorial Board. The editors hope to fill a communication gap 'by providing a vehicle for the publication of high quality papers from workers in specific areas of man-machine interaction'. Of the various areas to be bridged, those of special interest to the documentalist are computer-assisted instruction, systems theory and information retrieval. This first issue has an article entitled 'The role of the information scientist'.

Miss Mildred Couldrey

Many members will be sorry to learn of the death of Miss Mildred Couldrey. She was for many years Librarian of the Head Office Library of Imperial Chemical Industries Limited. In those days she took an active part not only in the affairs of Aslib but also in international activities in the field of documentation. She was one of the handful of British delegates who attended the Conference of the Institut Internationale de Bibliographie in London in 1928. After her retirement from ICI in 1947 she continued to take an active interest in Aslib, attending many conferences and meetings. She also became a trustee of the Fawcett Library and served on its committee. All those who knew her will remember her with affection. She was one of an earlier generation of special librarians, who laid the foundations of the present development of the profession but did not lose touch with it later.

Mr R. Snel

Members will be pleased to learn that Mr René Snel, a member of the Council of Aslib and Senior Executive, Communications and Information Techniques of the Shell International Petroleum Co. Ltd, has been awarded the Council Medal of the Institution of Chemical Engineers for his contribution to scientific and technical sciences. He has Aslib's sincere congratulations on this achievement.

Publications Officer

We welcome Mrs Jill M. Sutcliffe, B.A., our new Publications Officer, to Aslib. A graduate from Leeds University, she comes to us from Manchester University Press, where she had wide experience in academic publishing.

LINGUISTICS AND TRANSLATION

R.R.K. HARTMAN

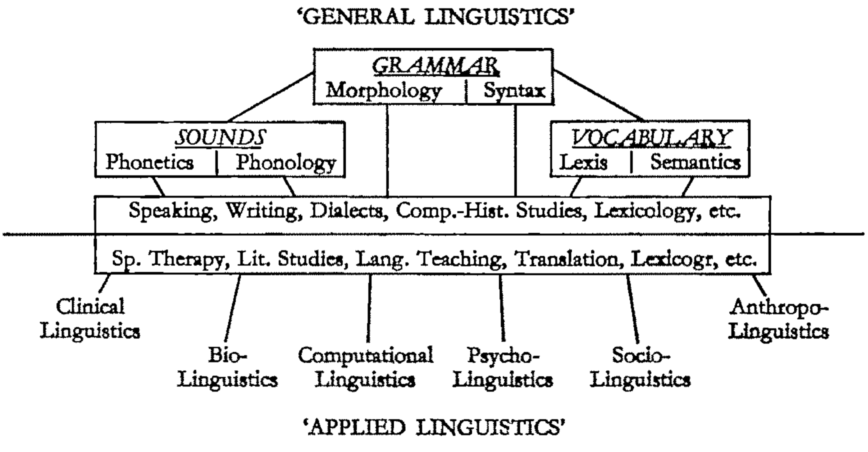
Lecturer in Applied Linguistics, University of Nottingham

Address given at Annual General Meeting of Aslib Technical Translation Group, Friday 17th January 1969

As an 'applied linguist' I look at the process of translation as one of the most interesting and fascinating interlingual operations we know—although we really don't know *enough* about it.

The value of linguistics

I should like to show you how I think that linguistics as a subject can provide some of the tools with which we tackle translation. Fundamental to any linguistic discipline must of course be *language*, the most basic means of human communication. There are a number of different ways of looking at language. The philosopher sees it as a vehicle for interpreting human experience, the anthropologist as a form of cultural behaviour, the sociologist as interaction between members of a social group, the student of literature as an artistic medium, the language teacher as a set of skills, the communication engineer as a collection of signs to be transmitted from point A to B, etc. All these fields have a contribution to make to our understanding of how language works, but we must not forget that it can only be the linguist (in the sense of linguistic scientist, not of polyglot layman) who brings to the study of language a *full* understanding of all the various processes involved in it. The linguist



recognizes the complexities of language: he knows that there are many facets to it and he develops his own techniques for analysing them.[1]

The term 'applied linguistics' has come to be used for various applications of linguistic and phonetic scholarship to specific practical fields. The first, and still the most important, of these is language teaching. Indeed, some linguists[2] use the term 'applied linguistics' to refer only to the acquisition of the native or a foreign language and its pedagogical aspects. Other branches of AL may be said to include lexicography (or dictionary-making), translation, speech pathology and therapy, etc. AL in the *widest* sense borders on other disciplines, some of which have been named Psycholinguistics, Biolinguistics, Sociolinguistics, Clinical Linguistics, Computational Linguistics, etc.

Let me enlarge on the term 'computational linguistics' to bring us back to the original topic. Much has been made in the last two decades of 'machine translation'. While 'translation by computer' is now practically defunct as a serious and realistic academic proposition, it has taught linguists—and non-linguists—a lot about the syntax and lexis of pairs of languages and about the characteristics of restricted languages.[3]

The nature of translation

As I see it, 'translation' is one of the *central* concerns of 'applied linguistics'. However, I do not consider linguistics to be the only donor to these problem-oriented studies; as an applied linguist I feel free to draw on non-linguistic studies such as psychology, education and communication technology, as long as their techniques and findings have a bearing on the problem at hand (sometimes they do, more often they don't). Linguists can 'take' or 'learn' almost as much from applying themselves to practical matters as they can 'give' or 'teach'. I must also admit that traditionally linguists have done precious little research into the problems of technical translation.

But in the last twenty years there has been enough interaction between translators, linguisticians, computer engineers, missionaries, documentation experts, language teachers, philosophers and others to develop a fairly general understanding of the elementary processes. We now know that there are various types of translation (oral translation or interpreting, written translation, translation by machine—perhaps), that there are various stages of translation (reading through the original, sorting out the vocabulary, preparing a first draft, checking it, polishing it, etc.); we know that the aim is to reproduce as accurately as possible all grammatical and lexical features of the source language original by finding suitable equivalents in the target language, and that sometimes it is more important to retain the factual information, sometimes the emphasis is on form.[4]

The linguistics of translation

I should like to sketch a few problems of translation and show how certain branches of linguistics might cope with them.

(i) *Type of Text*

Some progress has been made in the last few years to categorize and classify texts by various criteria. *One way* to do this is by using the so-called 'communication model' set up in information theory, incorporating factors which are not strictly speaking linguistic but are just as important in the communication process, namely the subject matter, the time and place to which the text refers, any personal attachments of author and reader, the special associations of satire and euphemism, and many others.

Linguistically, a text[5] can be described in terms of its graphemic, lexical, and grammatical components, first in terms of the division into *graphic words*, lines, sentences and paragraphs, which may or may not correspond neatly to the main points of information contained in the passage. We can then go on to characterize the *syntactic structures* of the text as ranging from the simple declarative subject-predicate pattern to highly complex grammatical forms including discontinuous constructions, embedding, and compounded dependent clauses.

Lexis may be just as complex. The vocabulary items in technical passages give a clue to the subject only to those familiar with the particular 'register' or equipped with an appropriate dictionary. Words which are infrequent in the general vocabulary occur here as technical terms with meanings peculiar to the special topic.

There are some procedures which can help to substantiate such vague labels as 'emotive', 'technical', 'expressive', etc., by providing numerical evidence. Statistical counts and computer programmes can be used to determine the frequency of linguistic elements in texts and their probability of occurrence, and thus to give valuable information on the characteristics of certain styles.[6]

One should also mention in this context the role of lexicography and terminology studies with which you are probably familiar. There has been much new work on the lexicological analysis of the vocabulary of some major languages, and a flood of dictionaries caters for the specialist user.[7]

(ii) *Contrastive Analysis*

The second area in which linguistic progress has been made which might be of relevance to the problem of translation is usually labelled with the collective term 'contrastive linguistics'. Such contrastive studies have been carried out on a small number of pairs of European languages, mainly in connection with language teaching needs, particularly the difficulties of 'interference'.[8] The trouble with contrastive work is that it usually presupposes the existence of descriptions of each of the respective pairs of languages, and they are not always available. One can only hope that the vast surveys which are now being undertaken will furnish more complete descriptions of the well known as well as the more exotic languages of the world. Two linguistic schools in particular compete in this field: 'Systemic' or 'Scale-and-Category' grammar, based on the Neo-Firthian ideas of M. A. K. Halliday[9] and relevant to the description of texts and language varieties and the classification of differences and similarities between source and target languages, and 'Transformational Generative' grammar, based on the Neo-Cartesian ideas of N. Chomsky[10] and relevant to the understanding of the underlying processes and structures of human speech.

Semantics, or the systematic study of meaning in language, has traditionally been regarded as one of the most fundamental disciplines in the elaboration of a theory of translation. Linguistic semantics looks at the way an individual language structures the world for its speakers, and at the sense relations that can be set up between different words or groups of words. I am sure I need not remind this audience of the truism that no two languages have the same semantic structure. 'Contrastive semantics' deals with the differences.[11]

(iii) *Techniques and Categories*

I have nothing to add to the available literature on how a translation is arrived at as a result of a number of *successive operations*. Most people seem to agree on the following stages:

1 reading the original text;
2 sorting out unknown vocabulary and getting other background information, possibly 'parallel texts';
3 drafting a first version;
4 checking the draft by referring to the original situation and to experts;
5 working out a final draft with special attention to style.

The next question my survey had a bearing on is that of setting up of different *categories of translation*. I am concerned not with the distinction made sometimes by professional translators themselves between 'literary' and 'pragmatic' translating but rather the linguistic classification of translations into such categories as 'word-for-word', 'literal', 'free' or 'idiomatic'. This question is also intimately tied up with establishing a rating scale for different 'qualities' of translations and assessing the contribution that a good dictionary can make. Catford's threefold categorization[12] into 'word-for-word', 'literal' and 'free' is useful and valid, as long as one realizes that the boundaries between them are not always rigid. According to the grammatical correspondence between the source and target-language texts, a word-for-word translation is 'rank-bound' at the level of the word. A literal translation is 'rank-bound' at the level of the phrase. A free translation is 'rank-bound' at the sentence level.

My data can be used to illustrate divisions into three or more categories, but I would rather see them as proof that there is what linguists call a 'cline' or continuum between the two extremes which Nida calls 'orientation toward formal equivalence' and 'orientation towards dynamic equivalence'.[13]

Conclusion

I must repeat my plea for more empirical research into translation within the framework provided by applied linguistics. If I have been able to show some of the lines along which such research may lead to results, then I have fulfilled my task tonight.

Translating is an extremely complex process, taxing the competence of the professional translator and testing the adequacy of the linguist's tools.

REFERENCES

1 There are a few good introductory textbooks to linguistics, e.g.: CRYSTAL, D. *What is linguistics?* Arnold, 1968; BENNETT, W. A. *Aspects of language and language teaching*. Cambridge U.P., 1968; HALL, R. A. *Linguistics and your language*. Anchor Books, 1960; LYONS, J. *Introduction to theoretical linguistics*. Cambridge U.P., 1968.

2 HALLIDAY, M. A. K., MCINTOSH, A., STREVENS, P. *The linguistic sciences and language teaching.* Longmans, 1964; VALDMAN, A. *Applied linguistics French. a guide for teachers.* Heath, 1965.

3 ALPAC Report. *Language and machines,* National Academy of Sciences and National Research Council, Automatic Language Processing Advisory Committee, Washington, D.C., 1966.

4 NIDA, E. A. *Toward a science of translating.* Brill, Leiden, 1964; BROWER, R A. *On translation.* Oxford U.P., 1966; JUMPELT, R. W. *Die Ubersetzung naturwissenschaftlicher und technischer Literatur.* Langenscheidt, 1961; MOUNIN, G. *Les problèmes théorétiques de la traduction.* Gallimard, Paris, 1963, UNESCO Report. *Scientific and technical translating,* 1957; OETTINGER, A. G. *Automatic language translation.* Harvard U.P., 1960; and numerous articles in such journals as *The Incorporated Linguist, Lebende Sprachen, The Bible Translator,* etc.

5 A text from *Suddeutsche Zeitung* on Swiss technological university education was used to illustrate some of the points made here, and the main results of a survey made in connection with a language examination for students of science and technology were presented.

6 On word frequency research, cf. HARTMANN, R. R. K. 'Bedeutung und Entwicklung der Worthaufigkeitsforschung', *Beiträge zur Sprachkunde und Informationsverarbeitung* No. 4 (1964), p. 47–57; on scientific vocabularies, cf. HOFFMANN, L. 'Zur Spezifik der Fachsprache in sprachstatistisches Sicht,' *Fremdsprachenunterricht,* 12 (1968), p 469–75.

7 Cf. journals *The Inc. Linguist, LES, Babel, BLI, Cahiers de Lexicologie, Idioma, Language and Speech, Linguistic Reporter, Voprosy Jazykoznanija* and various bibliographies, e.g. by WUSTER, E. and ZAUNMULLER, W.

8 Cf. the works by MOULTON, KUFNER, AGARD, STOCKWELL and others in the *Contrastive Studies* Series published by the Center of Applied Linguistics in Washington, D.C.

9 CATFORD, J C. *A linguistic theory of translation.* OUP, 1965.

10 BACH, E. *An introduction to transformational grammars.* Holt, 1964.

11 LEISI, E. *Der Wortinhalt. Seine Struktur im Deutschen und Englischen.* Quelle & Meyer, 3rd ed., Heidelberg, 1967.

12 CATFORD, *op. cit.*, p. 25.

13 NIDA, *op. cit.*

STEPS IN THE DEVELOPMENT OF BS 1000*

J. E. WRIGHT
Chairman of OC/20/4

Paper presented at Evening Meeting, Tuesday 25th February 1969

MY story starts in 1927 when, at a meeting with Dr S. C. Bradford, Keeper of the Science Museum Library, and others, Professor A. F. C. Pollard propounded his ideas for this country participating in a network of national societies, which would be affiliated to a central controlling body, in order to secure international unity in bibliographical procedure and classification—ideas Pollard had nurtured for nearly twenty years as a result of joining the Institut International de Bibliographie in 1908. Before 1927 ended the British Society for International Bibliography (BSIB) was formed and named as the British Section of the Institut International de Bibliographie, and also the International Bibliographic Centre for Pure and Applied Science. Thus, at the very beginning of its existence, BSIB was committed to the Universal Decimal Classification, developed by the IIB from the Decimal Classification of Melvil Dewey and sometimes called the Brussels Expansion.

Interest in the UDC grew rapidly and it was soon being used in a number of countries. Indeed, Pollard, who had been elected President of the IIB, was soon complaining that some users were introducing extensions of their own and so threatening the main requirement of universal usage, and a Classification Commission under Donker Duyvis was set up at The Hague to maintain the unity of the system.

So were laid the foundations of the FID, the British National Committee, and the machinery for extending the UDC to meet the needs of advancing subject fields.

The Association of Special Libraries and Information Bureaux (Aslib), formed in 1926, soon showed an interest in the UDC by publishing abridged versions of the Annual Reports of the Commission Internationale de la Classification Decimale prepared by Donker Duyvis. In 1930, reporting on the work of Aslib, Sir Frederick Nathan revealed that the Council had come to the conclusion that the time had come for Aslib to abandon its detached attitude and become the advocate of a particular classification system, and that a special committee, which had been set up, had come to the unanimous conclusion that Aslib should adopt the UDC. The Committee further recommended that Aslib should seek the co-operation of BSIB. As a result, a joint committee of the two bodies was formed, and it was decided to publish an

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* *Universal Decimal Classification.* English Full Edition. (4th international edition.) London, British Standards Institution.

English language edition of the UDC, with the approval of G. Dewey, son of Melvil, and the IIB. To this end a committee was set up to deal with the translating and editing, and, after some delay due to lack of funds, two fascicules, comprising the Auxiliary Tables and Class O Generalities, were published in 1936, Simpkins Marshall acting as the English agents.

In other aspects, too, the period 1930–39 was fruitful. For example, C. P. Brooks compiled extensive expansions of 551.3—part of geology, Metropolitan Vickers produced a translation of 621.3—electrical engineering, and the RIBA became the subject secretariat for 69 and 71—building and planning. In 1936 the Science Museum Library produced a third edition of its *Classification for Works on Pure and Applied Science*, in which the UDC, which had been adopted by the library in 1928, was applied for the first time. This constituted a most useful abridged edition of the tables which many UDC users kept by them for a long time.

In 1939, as a result of discussions between BSIB and the British Standards Institution, BSIB was requested to make nominations for a Technical Committee (DOM/1) on Documentation.

Its terms of reference were:

1 To prepare proposals for submission to the International Standards Association (ISA) on documentation and consider relevant matters referred by ISA to national standardization bodies.
2 To consider whether British Standards dealing with documentation should be issued and, if so, to draft such standards.

At the same time BSIB and Aslib requested BSI to take over the task of completing the English edition of the UDC and publish it as a standard. This work was entrusted to Sub-committee DOM/1/4, now known as OC/20/4.

So in a little over a decade much had been done since those pioneers, Pollard and Bradford, had argued for a universal system of classification to be adopted. BSIB and Aslib had supported and encouraged the adoption of the UDC and now BSI was to issue an English edition of the tables as a standard with the approval of Dewey's son and the IIB.

But then came the second world war. The English edition was being printed by Van Keerbergen et Fils of Brussels, which, as you know, was early in enemy hands. Moreover, the only copy of vol. 1, no. 1 to reach Simpkin Marshall was destroyed in the great fire blitz on London of 29th December 1940. In addition, and not surprisingly, it became increasingly difficult for members of DOM/1/4 to devote time to work not of the highest priority in the prevailing circumstances. Nevertheless, during the war years the following parts were published or republished:

Vol. 1,	Part 1	Introduction, Auxiliary Tables and Class O	1943
,, 2,	,, 1	50/53	1943
	2	54	1943
	3	55/59	1943
,, 4,	,, 2	621.3 immediately after the war	1946

The following drafts were circulated and made available to anyone who was interested:

620
621
621.1
.13
.2
621.4
.5
.6
.7
.8

Not surprisingly communication with The Hague during the war had virtually ceased, although some information leaked through, indicating that work was continuing on a German edition, but no news of extensions or amendments to the tables was available. Neither could we in this country put our proposals for extensions or amendments to the FID. So an approach was made to the Comptroller General of Patents, Designs and Trade Marks regarding the copyright position, and British proposals for modifying the tables, which in the circumstances could not be ratified by FID, were indicated when incorporated in the English edition by a distinguishing symbol.

With the end of hostilities, communications were soon re-established with FID and we were relieved to learn that Donker Duyvis and others in occupied Europe were safe, but somewhat dismayed at the large amount of material relating to extensions to the tables of the UDC which had accumulated at The Hague. In 1948 the first BS 1000 abridged edition was published, whilst one of the last acts of BSIB was to pay £175 to FID, the balance of the fee it owed as the British National Committee.

In 1949 the new Aslib was formed, incorporating and taking over the aims and objects and responsibilities of the BSIB and Aslib. Unfortunately this newly formed Aslib was in financial difficulties, so it was decided in 1950 that it could not meet the financial obligations of the British National Committee, which was accordingly dissolved. However, when in 1954 its financial position had improved, Aslib offered to shoulder again the responsibilities of membership of FID through its International Relations Committee on which BSI was to have *ex officio* representation. By agreement it was decided that the BSI nominee would speak at FID Council meetings on behalf of the British delegation on standardization and UDC matters and the Aslib nominee would speak at other times. BSI also undertook, since it was publishing BS 1000, to share in the FID subscription, an arrangement which continues to this day.

Nevertheless, the 1950s was a period of frustration which persisted into the 1960s. There was so much which needed to be done. Those parts of the tables which had been published, and the drafts already referred to, needed revising to include extensions and corrections which had since been issued by FID. Many parts, indeed most of the tables, were not available in full in English. Growing interest in the UDC resulted in increasing numbers of proposals for amending the tables, which needed to be carefully considered at national and international level. In many respects it was a vicious circle and the problem was knowing what to do first. There was only one member of BSI staff engaged on this work, Mr Lloyd. Many of the panels of OC/20/4 were sadly depleted in numbers, others had virtually ceased to exist. In the circumstances one can only wonder at what was achieved in this period. The tables for 678/679 were published in 1954, 622/623 in 1955, a second edition of the abridged edition in 1957, whilst in 1958 the tables of 69 as well as a trilingual abridged edition in English, French and German appeared. But it was not enough. A complete edition in English was needed, badly needed. BS 1000 was in danger of becoming a lost cause.

In 1961 Mr Newcombe joined BSI and he and Mr Lloyd did much work in co-operation with a few enthusiasts on the special subject editions which were published by other bodies and on some drafts of BS 1000. The areas these covered were:

The Auxiliary Tables of Place	
37	Education
539.1 621.039	Nuclear science
620.1	Materials testing
621.7	Workshop practice
621.9	Machine tools
669	Metallurgy

In 1963 BS 1000 C was published; the excellent guide to the UDC prepared at the request of the Library Association Reference and Special Libraries Section for a concise, practical guide to the UDC. It is a classic work and BSI and OC/20/4 are grateful to Mr Jack Mills for the hard work he put into this authoritative contribution.

All these were no doubt worthwhile tasks meeting certain needs, but OC/20/4 members, anxious for more progress on the publication of the full tables, feared that these extra activities would lead to delay in what they felt was now the prime task of all, for BS 1000 was not obviously any further ahead in 1963 when Mr Lloyd left to take up an appointment at FID in The Hague.

By 1964 the fourth (English) edition of the UDC, BS 1000, consisted only of:

0	1943	669	1949
515.9	1943	678/679	1954
621.3	1946 (second edition 1964)	69	1958
622/623	1955		

The position was still not good enough. There were unmistakable signs that unless a full English edition appeared very shortly even existing users would be forced to turn to the new systems of classification and indexing which were receiving a lot of attention, and new users could hardly be expected. Further representations were made to BSI stressing the urgent need to allocate more money to, and increase the staff of, the Documentation Section. Then a special meeting was called of all those who had helped BSI in the past, at which an appeal was made for renewed support for the panels for an all-out effort to finish the job (some fifty people attended). For the first time a target date was set. It was December 1969; on the face of it an impossible proposal but one which at least indicated a firm intention.

The plan was to produce English tables based on the latest official German edition and the extensions and amendments approved and published since the German edition. Panels would not at this stage attempt to improve the tables by proposing new extensions. Perfection was no longer to be the aim;

only to have available an English edition, as good as the German, which panels could then work on and improve for a later revised English edition.

The staff was further increased during 1966 and 1967 and BSI took the exceptional step of undertaking to pay for any translations or indexes needed by the panels, so that such work would not absrob the time of the staff, who would need to be fully occupied with editing and processing for publication the material received from the panels. Several thousand pounds have been spent to date in this way. Spurred on by these steps taken by BSI, the panels have made a quite remarkable effort and I feel it is not out of place here for me to record my admiration and thanks.

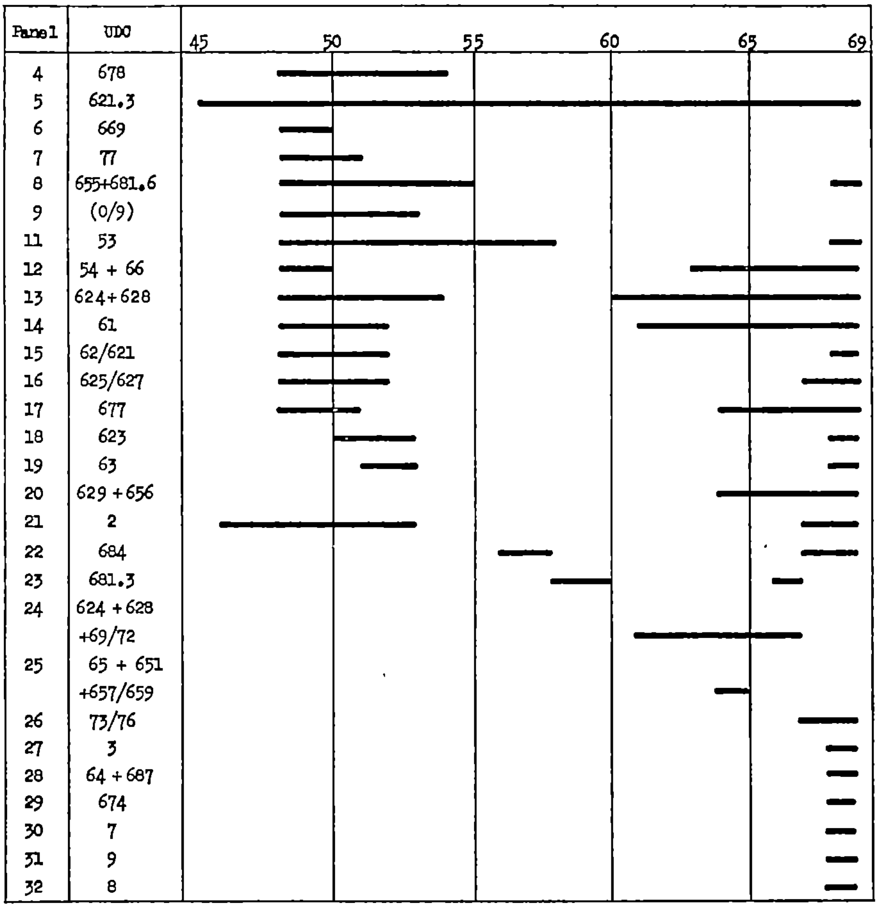
So the machine was at last moving and gathering momentum and during 1968 no less than fourteen parts of BS 1000 were published, and eleven parts, now with the printer, will be available very shortly. These will be followed by three parts about to be sent to the printer.

Any scheme relying on voluntary labour depends for its success on finding people sufficiently interested and dedicated to do the work. Moreover, the amount of time and energy such people can devote to a project is limited by their other commitments, and it is obviously not a practical proposition to attempt to dictate their rate of progress. Nevertheless, the secretariat can encourage and persuade them to make a great effort when this is needed, and to keep their minds on a time-table. On the other hand, whilst this typically British method of working, which is indeed of the essence of BSI's activities, and is evidently adequate for the production of standards not frequently changing, has been moderately successful in the production of BS 1000, one might well wonder whether a different method is necessary. I have in mind the remarkable output of proposed extensions and amendments flowing from VINITI and the progress made by the large staff employed on the production of the EJC thesaurus. Perhaps we in this country need a special organization with a permanent staff of specialists solely concerned with the development of the UDC. I say this because one must not lose sight of the fact that when Stage 1 of the programme—that is the completion of BS 1000—is finished there will remain a great deal to be done under Stage 2—bringing the tables to a state where the latest developments in advancing subject areas can be classified in detail. If, however, we are to continue the present method I am convinced that a further increase in funds for and the number of staff employed on the UDC is essential, so that they can process more rapidly material passed by the panels, give much more assistance and guidance to the panels, and provide services they are not at present giving. I have in mind, for instance, the need for much closer liaison between panels, so that when a panel is concerning itself with a part of the tables of interest also to another panel it is reminded of the fact and its deliberations brought to the notice of the other panel. A recent example of lack of such liaison is the extension of the tables under transport to cover aircraft landing systems, which involve radio and radar systems and equipment, the concern not only of the transport panel but also of the electrical engineering panel.

Speedier dissemination of information about extensions and corrections emanating from The Hague or proposals from other countries is also desirable, and I think regularly updated copies of the tables should be available to each panel when it meets. Equally important is early information about work in progress and about to be started by other panels at home and abroad. I believe that, even though we have BS 1000 C to which I have referred, there is still a need for a very much simpler practical guide to the way to use the UDC for the classification of books, articles, reports, etc. Something so simple that it tells you, for instance, how to ensure adequate classification whilst avoiding long numbers for this purpose on the spines of books for the shelf location. I think, too, that the UDC is not publicized enough. Advertising pays; indeed without it even the most worthwhile of goods will not sell. Freeman, Rigby and others have shown that there is no difficulty in putting the tables into a computer and producing a print-out, which can be updated, and unless such a print-out in English is very shortly to be available from FID I think it is highly desirable that we in this country should produce our own. Perhaps this is a project which would attract a supporting grant from OSTI.

I have said nothing about mechanization and information retrieval. Pioneering work has been done by a number of workers in this country and abroad but what can be done is of no significance if the tables are not quickly brought up to date and kept up to date.*

*See Tables on pp. 201–203.



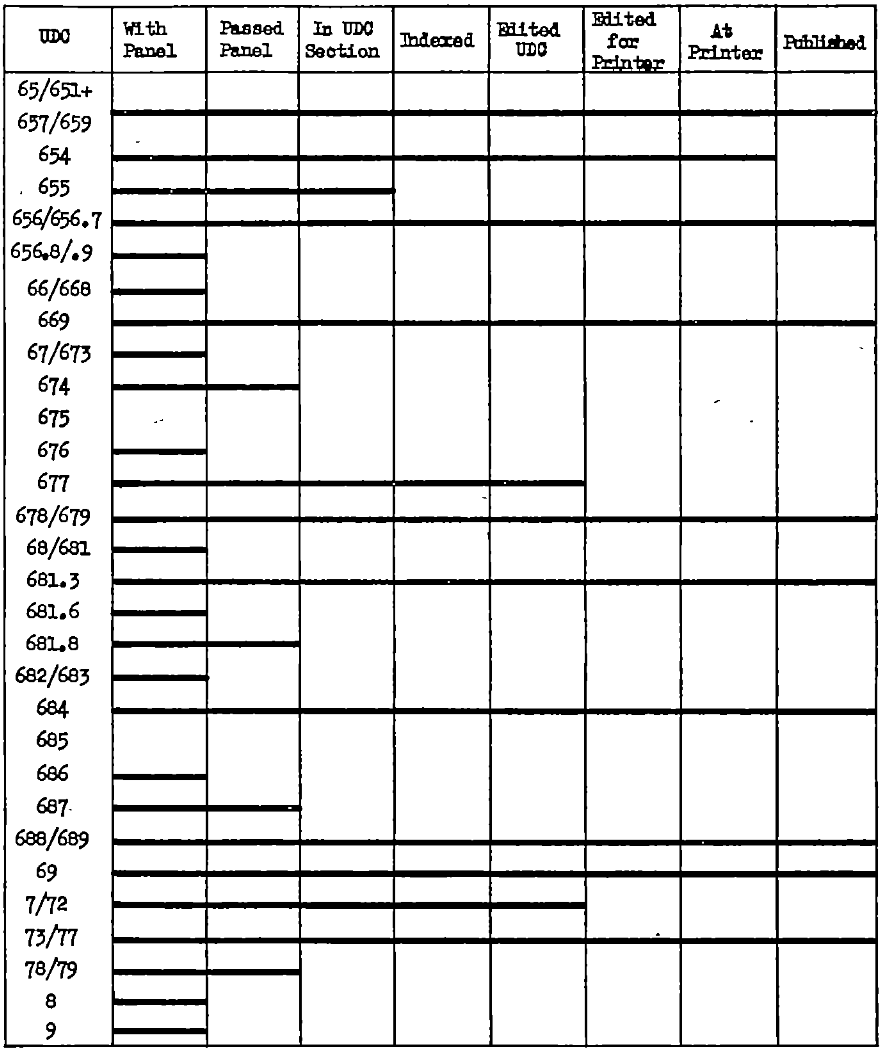
ACTIVITIES OF PANELS OF SUB-COMMITTEE OC/20/4
UNIVERSAL DECIMAL CLASSIFICATION

TABLE I

UDC	With Panel	Passed Panel	In UDC Section	Indexed	Edited UDC	Edited for Printer	At Printer	Published
0	▬	▬	▬	▬	▬	▬	▬	▬
1	▬	▬	▬	▬	▬	▬		
159.9	▬	▬	▬	▬	▬	▬	▬	▬
2	▬							
3/308	▬	▬	▬	▬	▬	▬	▬	
31	▬	▬						
32	▬							
33/330	▬	▬	▬	▬	▬	▬	▬	
331	▬							
332/335	▬	▬	▬	▬	▬	▬	▬	
336	▬							
337/339	▬	▬	▬	▬	▬	▬	▬	
34/36	▬							
37	▬	▬	▬	▬	▬	▬	▬	
38/382	▬	▬	▬	▬	▬	▬	▬	
383/39	▬							
5	▬	▬	▬	▬	▬	▬	▬	▬
6/608	▬							
611/615	▬	▬	▬	▬	▬	▬	▬	▬
616	▬	▬	▬					
617/618	▬	▬	▬	▬	▬	▬	▬	▬
62/621	▬							
622/624	▬	▬	▬	▬	▬	▬	▬	▬
625	▬	▬	▬	▬				
626/627	▬							
628	▬	▬	▬	▬	▬	▬	▬	▬
629	▬	▬	▬	▬				
63/632	▬							
633/635	▬	▬	▬					
636/639	▬	▬	▬	▬	▬			
64	▬							

PROGRESS ON ENGLISH FULL EDITION OF UDC BS 1000

TABLE 2(*a*)



PROGRESS ON ENGLISH FULL EDITION OF UDC BS 1000

TABLE 2(*b*)

THE UDC IN ITS INTERNATIONAL ASPECTS

G. A. LLOYD

FID Classification Department, The Hague

Paper presented at Evening Meeting, Tuesday 25th February 1969

UNIVERSAL Decimal Classification—dying duck or live bird?—or some such title—was suggested to me, but this is highly debatable, and there will hardly be time for the duck-shooters to develop a concerted onslaught in the half-hour or so allowed us for discussion. Besides, I hope to be able to convince you—if the BSI's fine efforts have not already done so—that the UDC is by no means the dying duck—certainly not the dead duck—that some of its severest critics seem to imagine. Perhaps the bird has ceased to soar as it once did in the times of Otlet, La Fontaine, Bradford and Donker Duyvis, but that it is still viable in the turbulent air of current documentation may be gauged from a recent FID inquiry aimed at obtaining figures for the distribution of UDC editions and an approximate estimate of the number of users throughout the world.

UDC Edition Distribution and Estimated Usership

Out of the more than forty-five FID national members or accredited UDC bodies circulated, only a dozen or so have so far sent in returns, though these include most of the major sponsoring bodies—BSI here, DNA for Germany, CIINTE for Poland and VINITI for USSR. From this limited response, however, it is already seen that:

1 for full editions (like BS 1000) the total number of copies of all published sections so far distributed is well over 100,000 (though the number of complete sets sold is but a fifth or less), whilst the distribution of abridged editions is about fifty thousand and that of special editions, guides, etc., around twenty thousand—making a grand total of 170,000 or more! Allowing for considerable overlap and duplicate purchases, the figure still remains comparable with the distribution of the Dewey DC, which most had thought to be far wider than the UDC;

2 the estimated figures for UDC users are of course less reliable but reveal a similar picture: although only about 750 periodicals and serial publications are reported in the dozen answers as definitely using the UDC (for articles and/or abstracts), there are some 110,000 libraries and documentation centres—including, it is true, over fifty thousand in the USSR and forty thousand in Poland, not to mention the indeterminate number of private users, some with substantial collections. A figure of 50–100,000 organizations (libraries, documentation centres and information services) seems, therefore, no exaggeration, and is certainly much higher than the very minimal estimate of ten thousand given in the foreword to the German

medium edition (*DK-Handausgabe*) of 1967. Such figures, taken in conjunction with recent significant developments in Latin American countries and—above all—in France, where the UDC is now being officially promoted in the new universities and technical establishments, are surely sufficient testament to the viability and use of the UDC throughout the world today.

The Role of the UDC in Referral Centres and Information Networks

All this, of course, is no reason for complacency on the part of those of us who feel that there is a need for some standard international classification like the UDC; with its massive usership the UDC is by no means always applied in a uniform way, so that it is still not ready for use as *the* standard artificial language for co-ordinating information networks. Yet this is just where the UDC can, and must, come into its own, for—despite the sterling efforts in Britain to build a General Faceted Classification (so admirable in conception)—the prospects of completing and publishing a substantial and acceptable improvement on the UDC are not altogether encouraging. For all its shortcomings, the UDC remains the most widely used general classification—available in many languages, and in editions of different levels of detail—and it is now shown to be usable, with relatively little modification, as the indexing language in a mechanized, computer-based information system following the recent work in USA, Germany, Denmark and elsewhere.

The many proponents of special classifications and thesaurus-type subject lists, which may be excellent and efficient in their own areas, cannot be expected to abandon these in favour of one standard classification—at least not initially, but they may well agree—for an international link-up—to accept one standard 'switch' language, with which they can each establish only one concordance instead of $n-1$ for n participating services. In the biomedical field, for instance, we have the NLM scheme (used in MEDLARS), the Excerpta Medica scheme and other contenders, none of which is compatible with, nor likely to give way in favour of, any of the others, but there is a chance that they may all accept a single standard 'link' or 'switch' scheme. In the engineering field there is the EJC Thesaurus, of course—a mighty tool indeed, but still not complete in its coverage of all branches of science and technology. Is there not a case, then, for the UDC—at least in broad outline—to be adopted as the supplementary switching or reference classification in these and other branches of knowledge, as has been partly done already for the Earth sciences through the WMO? This is indeed a distant goal we have set ourselves in the FID's Central Classification Committee (CCC), which is now by no means as conservative as once reputed. As part of the FID's general policy, efforts are constantly made to join with other international organizations towards this goal, though most have so far indicated that the time is not yet ripe, or that their funds are insufficient. A recent proposal submitted to the ICSU/UNESCO Central Committee in connection with their project on the feasibility of a World Scientific Information System (now called UNISIST) has not been accepted at this stage of the investigation, though the FID remains ready to co-operate as far as its limited resources will permit. An attempt to agree on the establishment of a concordance between the UDC and the International Classification for Patents (ICP) has indeed been received with some interest by the responsible Council of Europe commission, but referred for further action to a new committee which will include USSR, Czechoslovakia and other East European representation. Moves are afoot to see how best UDC codings can be applied to the MARC records, on which tagged space is reserved for this and other schemes: clearly the job cannot be done by the small staff at FID, but the main classifying might perhaps be done by programme-trained personnel in the shared-cataloguing agencies and given a quick check for consistency at the FID. There is a faint chance that this might lead to a three- or four-figure-level concordance between the UDC and Dewey DC, though any closer rapprochement seems unrealistic at this stage.

Eventually it may prove feasible to combine the advantages of the mainly hierarchic UDC with the more popular appeal of the thesaurus, and to try gradually to evolve on this basis something approaching a 'universal thesaurus' alongside the UDC.

Is this all too grandiose and Utopian—mere wishful thinking on our part? Undoubtedly there are many hurdles to be taken, but the FID and its CCC are convinced that any major information network of the future must have a central 'switch' language and that the UDC can fill this role, especially if it is combined with an authoritative thesaurus for control of terminology.

Mechanization of UDC and UDC in Mechanized Retrieval

Mechanization is, of course, the order of the day, and recently much more attention has been paid to both aspects—the mechanized processing and publication of UDC revision proposals, updating supplements and various editions on the one hand, and the use of UDC as indexing language in computer-based information retrieval systems. As a first step towards an improved UDC service at the FID and establishment of an international UDC-based referral centre, there is at last a prospect of installing at the FID headquarters an automatic tape-type writing machine, which will be used to prepare punched cards or paper-tape records of all UDC proposals and offset masters or stencils for a small office printing machine. Initially, these two pieces of equipment will be used without recourse to a computer, though the punched tape will of course be kept for later possible conversion to magnetic form and use in computers. It may even be possible to operate a simple UDC-based referral file of documentation centres and information services in the various fields of science, technology and the humanities without the aid of a computer, though this will obviously become more and more necessary as the referral centre extends in scope and coverage.

Use of the UDC in mechanized information retrieval systems has been really put on the map, only rather recently, following pioneering work mainly in the USA by Rigby and Russell, Freeman, Atherton and Caless. The first FID Seminar on UDC in mechanized information retrieval systems in Copenhagen last September drew sixty persons to hear and discuss the work of Freeman and Atherton, the ZMD workers in Frankfurt/Main and others: a beginning only, but a good one, to be followed by a second seminar next year, and no doubt others later. It is now clear that the UDC is quite usable in a computer-based information system, if not as efficient as specially designed codes. The CCC Sub-committee on Mechanization (CCC-M) is now busy elaborating a standard code for converting UDC symbols into acceptable form for computer programming.

UDC Structural Improvement and Schedule Revision

Much has been done, especially in recent years, to improve the UDC schedules. It is difficult to select without overlooking some worthy examples, but one must mention some parts of class 3 Social sciences (where our committee FID/C3 has had to contend with ideological differences), for example 32 Political science and 37 Education; in chemistry 543 Analysis; in the earth sciences virtually new schemes for Seismology and Geological exploration, and a completely new development for the Hydrosphere and hydrology in 556; in the medical sciences 615 Pharmacy; in engineering and technology, several important extensions in 621.3 Electrical engineering, 621.7/.9 Workshop practice, 622 Mining and ore preparation, 628 Public Health engineering, 629.7 the new Air/space vehicle scheme, improvements in 63 Agriculture, 66 Chemical technology and 677 Textiles, and the new 681.3 Data processing technique; in class 7, physical planning and architecture at 71/72 and photography at 77. It is noteworthy, perhaps, that a very substantial part of this revision work was basically British, before the recent concentration on the 'crash programme' for the English full edition.

In the general categories of the auxiliary tables there have been some—but not enough—improvements; for instance, a new facet with -05 for persons, and some tidying up of the language auxiliaries, though we have not yet come to grips with the basic reconstruction of a linguistic classification under the still free section 81.

In certain important areas revision is either too slow or only just belatedly beginning: in Physics, for instance, we still have no good scheme for Solid state; in Chemistry we have only just started serious work on a new schedule for Organics, whilst the old 546 Inorganics is imperfect and growing steadily less usable; in the Biomedical field there is a sad record of *laissez faire* so that it is difficult to classify such major topics as Molecular biology and Cytogenetics, whilst related topics like Bionics are also not at home—either under Biology or under Communication and Information science.

Nevertheless, the CCC has turned its attention seriously to improving our own home grounds of Documentation and Information work, for which the two major numbers 03 and 04 have been earmarked; it has also begun to give consideration to the problem of the recently vacated class 4, which may be a bridge between the social sciences at 3 and science and technology at 5 and 6, or be used for the newer topics like communication and information science and redevelopment of some of the more overcrowded subjects in section 62, or for a combination of all three. Thanks to the efforts of VINITI and other organizations, we are now getting massive revisions of several subject-fields, for instance 51 Mathematics (unrevised for half a century at least), 52 Astronomy, and 623 Military engineering.

Lastly, and most recently, the CCC has been reviewing the many different kinds of relationships at present loaded on the colon : or scattered here and there in different parts of the main and auxiliary tables, paying particular attention to the Relator schema of Jean M. Perreault, published in 1965 in the *Revue Internationale de Documentation*. After partial testing, mainly in the social sciences field, and some assurances that it would prove valuable especially in mechanized information indexing and retrieval, the CCC decided at its meeting last December to permit use of the new Perreault Relator schema in the UDC for a trial period of five years, using the small-letter notation in conjunction with the colon by way of stressing the still experimental nature of the project.

Tailpiece

The FID/CCC is impressed and gratified by the BSI's 'crash programme', which is now yielding a steady flow of sections of the English full edition. It is strongly pressing for completion of the English Medium Edition as an urgent priority in connection with the UDC's role as an international 'link' or 'switch' language. The initial impetus, after receipt of computer-aided print-outs of various English texts from Freeman and Atherton during the AIP-UDC Project, could not for various reasons be maintained, and the final manuscript editing and typing has had to be abandoned by the FID during the last year. Nevertheless, an English Medium Edition of the UDC *is* urgently needed, and the CCC is trying hard to find the means to complete it.

Funds and assistance are, indeed, needed at the FID General Secretariat if we are to tackle with any hope of success the problems I have tried to outline, and the prospects are perhaps a little rosier now than for the past few years. But in the future development of the UDC we need the fullest co-operation of all national members and accredited UDC organizations; above all, we need the British 'know-how' in matters of classification, which already has made so much improvement in the UDC and can play so important a part again. So I conclude by appealing to anyone interested and willing to participate in our UDC revision committees, or able to spare a little time to help improve specific sections, to contact us at the FID General Secretariat. In such a brief survey it has not been possible to go into any topic in detail, but I hope you will have gathered that the UDC is not a dying concern but a scheme capable of fulfilling a useful role in traditional or mechanized information systems.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

*Items are available in the Aslib Library and may be borrowed unless marked * to indicate reference copies.*

Library Systems

HAYES, ROBERT M.
Quality and quantity in the college library.
College Library Notes, Winter 1969, p.1–4.
Quantitative criteria for establishing goals for library collections.

HAMEL, G. A.
De bibliotheek van de Technische Hogeschool te Delft en de literatuur in minder toegankelijke talen.
Open, vol.1, January 1969, p.14–21.
The library of the Delft School of Technology and the European Translations Center.

URQUHART, D. J.
The National Lending Library, 1968.
Library Association Record, vol.71, no.3, March 1969, p.77–8.
Personal reflections on the work of NLL during 1968 intended for those who operate libraries using its services.

LAZEROW, SAMUEL
The U.S. National Libraries Task Force: an instrument for national library cooperation.
Special Libraries, vol.59, no.9, November 1968, p.698–703.
Review of progress, June 1967 to June 1968.

RANGER, FELICITY
The National Register of Archives, 1945–1969.
Journal of the Society of Archivists, vol.3, no.9, April 1969, p 452–62.

Administration and Management

BUNCH, ANTONIA J., *and* CUMMING, EILEEN
Libraries in hospitals; a review of services in Scotland. [Edinburgh], Scottish Hospital Centre, 1969.
72 p., illus., 15*s*.

WASSERMAN, PAUL, *and* BUNDY, MARY LEE, *eds.*
Reader in library administration. Washington, D.C., NCR Microcard Editions, 1968. xii, 403 p.
Readers in Library and Information Science.

WILDER, DAVID
Management attitudes; team relationships.
Library Journal, vol.94, no.3, 1 February 1969, p.498–502.
Job satisfaction in libraries.

SMITH, ELDRED
Do libraries need managers?
Library Journal, vol.94, no.3, 1 February 1969, p.502–6.

LOOSJES, TH. P.
Horizontale organisatie; gedachten over de interne organisatorische structuur in een grote bibliotheek.
Open, vol.1, no.2, February 1969, p.67–73.
Horizontal organisation—thoughts on internal organisation structure in a large library.

PIZER, IRWIN H., *and* CAIN, ALEXANDER N.
Objective tests of library performance.
Special Libraries, vol.59, no.9, November 1968, p.704–11.
Description of tests of library performance by the Institute for Advancement of Medical Communication.

LIBRARY overdue notices; [letters by]
D V. Arnold, M. M Rayner, G. St. C Cornwall and K P. Jones.
Library Association Record, vol.71, no.2, February 1969, p.52.
Cost and value of Xerox-produced overdue notices.

RIES, JOSEPH
Klebebander.
Nachrichten, Nouvelles, Notizie, vol.45, no.1, 1969, p.4–7.
Discusses the dangers of using adhesive tape for the repairing of books, etc.

BOER, D.
Business archives in automated information retrieval systems.
Open, no.1, January 1969, p.28–36.

SMIRNOV, K. A.
A method of investigating flows of standards technical documentation in the All-Union Information Archives for Standards (VIFS).
NLL Translations Bulletin, vol.11, no.2, February 1969, p.161–79.

Translated from *Standarty i Kachestvo,* no.8, 1967, p.54–8.

SURVEY of inter-library lending
OSTI Newsletter, no.1, March 1969, p 9.
A survey carried out by OSTI to analyse the flow of requests and to obtain a picture of the needs for inter-library loans and the parts played by various channels used.

Printing and Publishing

IBRAHIM, KAREN
Graphic arts around the globe. Part I: International aspects of typesetting, facsimile transmission, and scanners.
Graphic Arts Progress, vol.15, no.11, November 1968, p.3–7, bibliog.
Describes the growing 'internationality' in the printing world.

IBRAHIM, KAREN
Graphic arts around the globe. Part 2. International aspects of printing processes, personnel, and printed products.
Graphic Arts Progress, vol.15, no.12, December 1968, p.8–13.
Gives views of visitors to such countries as Great Britain, West Germany, Scandinavia, the rest of Europe, the Socialist bloc and Japan concerning letterpress, offset lithography, and gravure.

KASULKE, WINFRIED
Das IBM Magnetband—Composer—System im Dienst der Aussenhandels information des Bundes.
IBM Nachrichten, vol.19, no.193, February 1969, p.512–17.
Describes the IBM tape typewriter system used for producing information bulletins and brochures at the State Department for Export Information, Koln.

BRYAN, HARRISON
The explosion in published information—myth or reality.
Australian Library Journal, vol.17, no.11, December 1968, p.389–401.
Statistics show there is an increase in publication of new information quantitatively but not necessarily in quality. The author therefore sees it as a problem more for users than processers of information.

CHARACTERISTICS of journal publications.
New York, American Institute of Physics, Information Division, 1968.
4 p., ID 68–16.

GOFFMAN, WILLIAM, *and* WARREN, KENNETH S.
Dispersion of papers among journals based on a mathematical analysis of two diverse medical literatures.
Nature, vol.221, no.5187, March 29, 1969, p.1205–7.
Two entire literatures (mast cell and schistosomiasis) differ in nearly all respects. General laws governing the dispersion of any medical literature may be deduced.

GEDRIMOVICH, G. V.
Rasseyanie publikatsii po metallurgii v mirovoi periodike.
Nauchno-Tekhnicheskaya Informatsiya, Seriya I, no.11, 1968, p.12–17.
Scatter of metallurgical publications in world periodicals.

DUTTA, S.
Frequency symbol for periodical publications.
Annals of Library Science and Documentation, vol.15, no.1, March 1968, p.35–6.
Symbols to represent the terms daily, weekly, monthly, etc.

BOHNE, HARALD
Standard Book Numbers.
Canadian Library, vol.26, no.1, January–February 1969, p.45–7.
Description of SBN as assigned by the University of Toronto Press.

DE WIJN, J. H.
Boeknummers.
Open, vol.1, no.3, March 1969, p.155–9.
Standard book numbers.

BARKER, RONALD E.
International copyright the way ahead.
Bookseller, 22 February 1969, p.1430–2.
Results of meetings of the Permanent Committee of the Berne Union and the Intergovernmental Committee of the Universal Copyright in Paris, 3rd to 7th February 1968.

MARKE, JULIUS J., *Chairman*
Can copyright law respond to the new technology?
Law Library Journal, vol.61, no 4, November 1968, p.387–408.
Report of the 61st Annual Meeting of the American Association of Law Libraries at Philadelphia, discussing how copyright law can respond to the new technology.

Reprography

THIELE, GEORG
Aufgaben und Tatigkeit der reprographischen Abteilung des Instituts fur Dokumentationswesen (IDW).
Nachrichten fur Dokumentation, vol.20, no.1, February 1969, p.34–5.
The aims and activities of the reprographic section of the Institute for Documentation.

MULLER, GERHARD
Die Reprographie nach dem II Internationalen Kongress in Koln. A. Entwicklungstand und Tendenzen der reprographischen Verfahren.
Nachrichten fur Dokumentation, vol.20, no.1, February 1969, p.21–3.
Given at the 20th Annual Conference of the Deutsche Gesellschaft fur Dokumentation, Bad Durkheim, 10th October 1968. Trends in reprographic processes.

MULLER, HERBERT E.
Die Reprographie nach dem II Internationalen Kongress in Koln. B. Tendenzen der Technik der Reprographie.
Nachrichten fur Dokumentation, vol.20, no.1, February 1969, p.24–6.
Given at the 20th Annual Conference of the Deutsche Gesellschaft fur Dokumentation. Bad Durkheim 10th October 1968.
Trends in reprographic techniques.

HOPSON, JACK
Copying S/S originals without a camera.
Small Offset User, vol.18, no.207, January 1969, p.75–7.
Making same size copies from original artwork or printed matter economically, either by direct contact or by Reflex copying techniques.

WILLIAMS, B. J. S.
Recent developments in microforms systems.
Information Scientist, vol.3, no.1, March 1969, p.31–8.

PLUMB, PHILIP W.
Microphotography and The Open University.
Microdoc, vol.7, no.4, 1968, p.91–3.
Suggestion that the Open University Library lends microform copies of material.

SIEBEL, KURT
Bildfernubertragung aus der automatischen Registratur.
Nachrichten fur Dokumentation, vol.20, no.1, February 1969, p.27–9.
Describes the RANDTRIEVER automatic information systems, using the REMSTAR facsimile transmission apparatus.

Subject Organization

BAKEWELL, K. G. B.
Industrial libraries throughout the world. Oxford, Pergamon, 1969.
184 p. (International Series of Monographs in Library and Information Science.)

LEIBOVICI, JOSEPHINE, *and* MARCU, ELIZA
Sugestii de intocmire a ghidurilor de documentare. Categoriile de Ghiduri. Rolul ghidurilor de documentare in regăsirea informatiilor.
Probleme de Documentare şi Informare, vol.2, no.12, December 1968, p.795–99.
The purpose and use of guides to the literature with references to specific guides.

WOOD, D. N., *and* BOWER, C. A.
The NLL's collection of social science periodicals.
Library Association Record, vol.71, no.2, February 1969, p.39–40.

WHITE, BRENDA
Information for planning.
Library World, vol.70, no.825, March 1969, p.223–6, 8.
The subject range of planning, the sources of information and types of libraries which offer planning information.

PICKFORD, A. G. A.
Notes on the issue of set E, part 1.
FAIR Newsletter, no.10, February 1969, p.1–3.
Describes the service given by FAIR and the issue of Set E, part 1, which contains 320 references to biomedical engineering literature published early in 1968.

MERSKY, ROY M., *Chairman*
Planning and design of law libraries.
Law Library Journal, vol.61, no.4, November 1968, p.421–39.

BYSTROM, MARCIA
Agricultural information: can you find it with the index?
Special Libraries, vol.59, no.9, November 1968, p.712–7.
Comparison of *Soils and Fertilizers, Biological and Agricultural Index, Bibliography of Agriculture. Chemical Abstracts* and N—a bibliography for agricultural scientists (unpublished).

BUTCHER, M. H.
Information retrieval in the National Agricultural Advisory Service.
NAAS Quarterly Review, no.81, Autumn 1968, p.43–6.

BAILLIE, H. M. G.
The use of the resources of the Historical Manuscripts Commission.
Journal of the Society of Archivists, vol.3, no.9, April 1969, p.462–6.

Mechanization

APPAREILS et fiches perforées pour selection manuelle.
Bulletin du CIMAB, no.2, February 1969, Classement 2, 7, p.1–37.
A number of manual punched card systems are described and their principles and applications given.

AVRAM, HENRIETTE D., *and* DROZ, JULIUS R.
MARC II and COBOL.
Journal of Library Automation, vol.1, no.4, December 1968, p.261–72.
A description of the machine processing of MARC II records using COBOL for an application on the library of Congress System 360/30.

BALFOUR, FREDERICK M.
Conversion of bibliographic information to machine readable form using on-line computer terminals.
Journal of Library Automation, vol.1, no.4,

December 1968, p.217–26.
Describes part of a project using IBM DATATEXT to convert the shelf list of the Libraries of the State University of New York at Buffalo to machine-readable form.

RATTET, LANA S., *and* GOLDSTEIN, J. H.
Computerizing scientific bibliographies.
Journal of Chemical Education, vol.45, no.11, November 1968, p.734–6.
Description of the application of a digital computer to the storage and selective retrieval of bibliographical material.

RUECKING, FREDERICK H.
Bibliographic retrieval from bibliographic input; the hypothesis and construction of a test.
Journal of Library Automation, vol.1, no.4, December 1968, p.227–38.
A study of problems associated with bibliographic retrieval using unverified input data supplied by requesters at the Fondren Library, Rice University, Houston, Texas. A code was derived and used for retrieval tests on an IBM 1401 computer.

WEIL, CHERIE B.
Automatic retrieval of biographical reference books.
Journal of Library Automation, vol.1, no.4, December 1968, p.239–49.
A description of one of the attempts to automate a reference service, with an evaluation of the system at the Institute for Computer Research, University of Chicago.

JESTES, EDWARD C.
An example of systems analysis: locating a book in a reference room.
Special Libraries, vol.59, no.9, November 1968, p.722–8.
A reference room sub-system is analysed and an improved system suggested.

PRITCHARD, ALAN
A guide to computer literature; an introductory survey of the sources of information London, Clive Bingley, 1969. SBN 85157 074 7.
130 p.

ARIÈS, PHILIPPE
Du bon usage de l'ordinateur par les centres de documentation spécialisés.
Bulletin des Bibliothèques de France, vol.13, no.12, December 1968, p.531–9.
The application of computers in specialized documentation centres.

WELLISCH, H.
An international center for standards documentation: proposals for standardization of UDC usage and the mechanized documentation of information on standards. Tel Aviv, Israel Society of Special Libraries and Information Centres, 1969.
19 p. (Contributions to information Science no. 3.)

Classification and Cataloguing

*ROYAL INSTITUTE OF BRITISH ARCHITECTS
CI/SfB, practice note no.1. London, the Institute, 1969.
9 p.

NEELAMEGHAN, A., *and* VENKATARAMAN, S.
Use of computer for the synthesis of class number; a case study with a freely faceted version of Colon classification.
Library Science with a Slant to Documentation, vol.5, no.4, December 1968, p.359–88.

A NOTE on the classification used in the Bayswater division
Aids to Readers, no.16, [1969], 7 p.
National Reference Library of Science and Invention.

WESTBY, BARBARA M.
Shared cataloguing. Dublin, University College Dublin, 1969.
16 p., bibliog. (University College Dublin. School of Librarianship Publications.)

HENDERSON, JAMES W., *and* ROSENTHAL, JOSEPH A., *ed.*
Library catalogs: their preservation and maintenance by photographic and automated techniques. A study by the Research Libraries of the New York Public Library under a grant from the Council on Library Resources. Cambridge, Mass., M.I.T. Press, 1968.
267 p., diagrs. (M.I.T. Report no.14.)

DOWNING, J. C.
A national cataloguing policy.
Library Association Record, vol.71, no.3, March 1969, p.61–5.
Paper given at the London Seminar of the Cataloguing and Indexing Group of the L.A. on the Implementation of the AACR. Describes the pre-publication review of the British Text of the Anglo-American Cataloguing Rules (1967) undertaken by the staff of BNB, and argues for the adoption of AACR in all libraries.

SALVI, G. N., *and* GUHA, B.
The Anglo-American cataloging rules with emphasis on rule 14 (reviser or original author).
Annals of Library Science and Documentation, vol.15, no.1, March 1968, p.24–30.

MARGOT, J. M., *and* MONNIER, J. F.
BITRA Système pour l'édition automatique d'un catalogue de bibliothèque.
T.A. Informations, no.2, 1968, p.59–64.
System for automatic production of a catalogue at Ebauches S.A. (Switzerland).

VENKATARAMAN, S., *and* NEELAMEGHAN, A.
Catalogue-on-tape.
Library Science with a Slant to Documentation, vol.5, no.4, December 1968, p.317–30.
The preparation of a catalogue on magnetic tape at the Documentation Research and Training Centre, Bangalore.

Language and Indexing

VCHERASHNII, R. P.
O terminologii v oblasti patentnoi informatsii.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no 11, 1968, p.7–11.
Terminology of patent information.

GERSHON, M. R.
Building a management services thesaurus.
O & M Bulletin, vol.24, no.1, February 1969, p.19–26.

NUGENT, WILLIAM R.
Compression word coding techniques for information retrieval.
Journal of Library Automation, vol.1, no.4, December 1968, p.250–60.

BORILLO, A., *and* VIRBEL, J.
Problèmes syntaxique de l'indexation automatique de documents.
T.A. Informations, no.2, 1968, p.33–51.
Syntactic problems in the automatic indexing of documents.

BOSE, H.
An extension to cyclic indexing.
Annals of Library Science and Documentation, vol.15, no.1, March 1968, p.31–4.
Arrangements of components of UDC numbers for single entry classified catalogues.

SCHAFER, GUNTER, *and* SCHONHERR, HANNS-JOACHIM
Das Projekt Bablyon: ein System maschineller Ubersetzungshilfen.
IBM Nachrichten, vol.19, no.193, February 1969, p.518–24.
The research base of IBM (Germany) has developed a system to aid machine translation of specialist subjects. Aids include multilingual alphabetical indexes and chronological reading lists of subject terms.

COCHRANE, F.
Finding a translator.
Board of Trade Journal, vol.196, 24 January 1969, p.235.
Translation services and existing translations: how to locate them.

RANGRA, V K.
A study of cover to cover English translations of Russian scientific and technical journals.
Annals of Library Science and Documentation, vol.15, no.1, March 1968, p.7–23.

Information Processing and Systems

VENKATARAMAN, S., *and* NEELAMEGHAN, A.
Document finding.
Library Science with a Slant to Documentation, vol.5, no.4, December 1968, p.331–58.
Automatic retrieval of documents; the method used at the Documentation Research and Training Centre, Bangalore.

NEELAMEGHAN, A.
Design of the document finding system: general features.
Library Science with a Slant to Documentation, vol.5, no.4, December 1968, p.303–16.
Describes an experiment in automatic information retrieval using a KL 1903 computer.

RANGANATHAN, S. R.
Doc-finder.
Library Science with a Slant to Documentation, vol.5, no.4, December 1968, p.289–302.
The use of computers for documentation and the Colon Classification as an indexing language.

WINKLER, ULRICH
AUTOQEST—ein Verfahren der automatischen Abfragenerierung.
Nachrichten fur Dokumentation, vol.20, no.1, February 1969, p.16–20.
AUTOQEST—a program for automatic request generation.

BARKLA, J. K.
The University of Sheffield Biomedical Information Project.
Information Scientist, vol.3, no.1, March 1969, p.13–30.
Outlines the history of the Project and the development, with OSTI support, of an information service in intestinal absorption which is intended to become self-supporting.

WILLSHER, M. J. D., *and* EGGINS, H. O. W.
Economic problems in the running of a specialized information centre.
Information Scientist, vol.3, no.1, March 1969, p.3–11.
Origins and operations of the Biodeterioration Information Centre; the problems facing a small information unit trying to become self-supporting.

FAUTH, H. P.
Information Retrieval in Mikrofilm System.
Nachrichten fur Dokumentation, vol.20, no.1, February 1969, p.32–4.
Examines current processes from optical indexing of sets of microfilms to binary code systems.

SIMMS, DANIEL M
What is a system analyst?
Special Libraries, vol.59, no.9, November 1968, p.718–21.
Definition and ten basic instructions for the novice analyst.

ESRO–ELDO. Space Documentation Service.
Description of services available: guide to the formulation of questions for computer search, and comprehensive list of machine produced bibliographies. [Paris?], The Service, 1969.
58 p. (SDS/107/G, rev. 2.)

LAZORICK, YEIALD J.
Computer/communications system at SUNY Buffalo.
Educom, vol.4, no.1, February 1969, p.1–4.
The computer-based system of selective dissemination of information at the Technical Information Dissemination Bureau at the State University of New York.

Communication and knowledge

PEREZ–VITORIA, A.
Plans for a world science information system.
Unesco Chronicle, vol.15, no.2, February 1969, p.55–61.
Discussion of the proposed world science information system UNISIST, to be under the auspices of the ICSU and Unesco.

Professional Activity

DOLAN, F. T.
The role of the information scientist.
International Journal of Man-Machine Studies, vol.1, no.1, January 1969, p.39–50.
Defines information science and discusses role of information retrieval in the total information system.

KASER, DAVID
The academic librarian and the protocol of scholarship.
Library Journal, vol.94, no.4, 15 February 1969, p.719–21.
Academic librarians were formerly chosen for their scholarship; now it is important to look for management and librarianship ability, as libraries grow in size.

KLEMPNER, IRVING M.
Information centers and continuing education for librarianship.
Special Libraries, vol.59, no.9, November 1968, p.729–32.
The need for in-depth and synthesized information to the creation of information centres. Lack of continuing education for librarians causes inability to meet the demand for such information.

HEPWORTH, JOHN B.
Problems of orientation in professional education.
Library Association Record, vol.71, no.2, February 1969, p.33–5.
Library experience as part of library science courses.

LAND, BRIAN
New directions in education for librarianship in Canada.
Canadian Library, vol.26, no.1, January–February 1969, p.36–40.

RIECK, MAJA
Zur Reform der Ausbildung fur den gehobenen Dienst an wissenschaftlichen Bibliotheken.
Zeitschrift fur Bibliothekswesen und Bibliographie, vol.16, no.1, 1969, p.24–30
Ideas for reforming further education for scientific librarianship, based on the author's own educational experiences. Emphasis is placed on subject specialisation.

RICHNELL, D. T.
Mature registration revised.
Library Association Record, vol.71, no.3, March 1969, p.66–8.
Details of a revised Mature Registration scheme followed by draft regulations for the scheme and Notes for the guidance of the Board of Assessors.

COLSON, JOHN C.
Of librarians and historians: speculations on the uses of library history. Richard A. Bartlett, editor.
Journal of Library History, vol.4, no.1, January 1969, p.65–71.

REID-SMITH, EDWARD R., *comp.*
A select catalogue of unpublished theses, dissertations and essays presented for British qualifications, of some interest to librarians.
Research in Librarianship, vol.2, no.9, September 1968, p.67–78.

AMERICAN INSTITUTE OF PHYSICS. Information Division
Bibliography of information division publications. New York, the Institute, 1969, 4 p., (ID 69–1.)

*MCHARG, ALISON, *and* PHILLIPS, SALLY, *comp.*
Directory of Rhodesian libraries.
Salisbury, National Archives of Rhodesia, 1969.
vii, 29 p.

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RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineer-

ing. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

WILFRED E. GOODAY, ARSM, DIC, C.ENG, MIMM, FIL. Member of Translators' Guild, Romanian and French. 161 Rivermead Court, London SW6. RENown 1912.

TECHNICAL TRANSLATIONS from Russian, German and Polish into English. B. Klipstein, B SC(HONS), 1 Glenview Grove, Shipley, Yorkshire. Tel. Shipley 58215.

TECHNICAL AND COMMERCIAL translations from English into Russian. Mrs O. Linsley, 31 Parke Road, Barnes, London SW13. Tel. 01-748 8822.

TECHNICAL TRANSLATIONS from Japanese into English. R. A Scutt, BA, 48 Somerset Avenue, West Wimbledon, London SW20. Tel. WIMbledon 1713 (01-946 1713).

RUSSIAN TO ENGLISH TRANSLATIONS. Physical sciences, all industries. Fast service. Ceramics and high temperatures specialities. Kenneth Shaw, c/o CIS Ltd, Churston End, Copythorne Road, Brixham, Devon. Tel. Brixham 3221.

TRANSLATIONS: TECHNICAL, SCIENTIFIC, all west-European languages. J Smuts, B SC (ENGINEERING), FIL, 12 Thorndene Avenue, London N11. Tel. 01-360 7723.

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The Documentation Centre of the European Institute of Business Administration, Fontainebleau, France, seeks a lady documentalist for its expanding service. The work will consist of analysing and indexing British and U.S. management periodicals. *Replies to the Manager,* **Documentation Centre, INSEAD, Boulevard de Constance, 77 Fontainebleau, France.**

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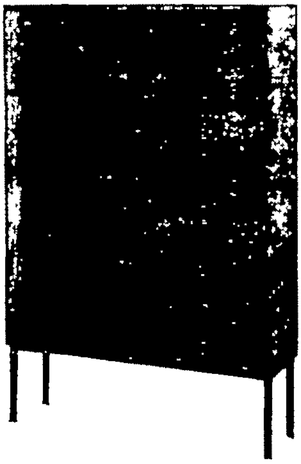

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 21 **June 1969** **Number 6**

ASLIB CALENDAR 1969

June

MON.16.	Special meeting. Proposal to form an Aslib Social Sciences Group. 3 Belgrave Square at 3.30 p.m.
FRI.27 – SUN.29.	Electronics Group. Annual Conference. Westcliff.

July

FRI.25.	Technical Translation Group. Evening meeting. The compilation of a dictionary. 3 Belgrave Square at 4 p.m.

September

SUN.21 – WED.24.	43rd Annual Conference, University of Warwick, Coventry.

October

WED.22.	Evening Meeting at Aslib. The SCAN system.
TUE.28 – THU.30.	Aslib/Construction Industry Research and Information Association. Joint Conference. Leamington Spa.

1970

February

TUE.25.	Evening meeting at Aslib. Facsimile transmission. Speaker: J. J. Hall. 5 p.m. for 5.30 p.m.

Aslib Aeronautical Group

The eighteenth annual Conference was held over the week-end 11th–13th April 1969, forty-seven members attending out of the fifty-one expected. At the Annual General Meeting it was announced that the Conference Secretary, Mr E. J. MacAdam, Deputy Librarian, College of Aeronautics, would henceforth be combining the duties of Conference and Group Secretary. The Conference appears to have been amongst the most successful and stimulating, if exhausting, ones ever held. It started with a film showing the first flight of the Concorde at Toulouse, then the Soviet Aviation Day film of the 1967 Domodedovo Air Display. The first lecture was by Mr D. Kennington, who compared the various commercially offered product information services, followed by Mr W. A. Martin of the European Space Research Organization* who, at short notice, talked on their data retrieval scheme recently introduced and the capacity problems of the present computer system they have. In the afternoon Mr John W. R. Taylor described how the massive annual compilation of *Jane's All the World's Aircraft* is undertaken. The next day Mr J. M. Bruce, of the Royal Air Force Museum, spoke on the snares and pitfalls astride the path of the seeker for historical aeronautical exactitude. Next Mr R. J. N. Offer spelt out what was really meant by dialogue with a computer at a remote access terminal for 'Computer Aided Design'. It is reassuring to know that one cannot accidentally dump the contents of a memory store! Finally, Mr J. Martyn, of the Aslib Research Department, spoke on the evaluation of information handling systems and library practices in general. All the lectures prompted avid discussion.

The annual dinner, as usual, was held half-way through the Conference.

Aslib Chemical Group

The introduction of the computer to information systems has presented the information scientist with new problems. Computer terminology is often both abstruse and confusing and attempts at explanation are not always very successful or pertinent.

For this reason International Computers Limited, in conjunction with the Aslib Chemical Group, are holding a week-end course designed especially for the information scientist. The course assumes no knowledge by the student and will cover such topics as computer programming, computing equipment, file handling and current information applications. The aim is to teach students sufficient about computers to enable them to discuss their projects intelligently with their companies' computer staff.

The course will be held at Hedson Park, Taplow, Bucks, during the week-end 26th–28th September 1969. Applications for places should be addressed to the organizer: J. R. Harris, ICL, 205–213 High Street, Beckenham, Kent.

The closing date for applications is 31st July and the cost, including wine at certain meals, is £26 5*s*.

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*See *Aslib Proceedings*, 21 (4), p. 150, April 1969.

The topics covered will be as follows:

26th September

'What the computer is'—basic introduction, including film.

27th September

Information storage. Files, their organization and manipulation.

Programming the computer.

Programming languages, their applications and the logic required to use them.

Current use of computers for information work. Software, what it means and who produces it.

Likely developments of computer hardware and their implication to information handling.

28th September

Likely developments of computer software in the field of information science.

Course review and open discussion.

An opportunity will be given for individuals to operate a variety of computer equipment under supervision.

A bar is available each lunch-time and in the evenings wine is served with dinner. Ample car parking is available and accommodation is in single study bedrooms. A map will be sent to all attending the Course.

Aslib Electronics Group

Chairman	Mrs E. M. Codlin	(British Oxygen Company Ltd).
Hon. Secretary	Mrs B. Taylor	(Plessey Telecommunications Group).
Hon. Treasurer	Mr R. S. Lawrie	(Sperry Gyroscope Division).
Hon. Conference Secretary	Mr J. E. Wright	(Institution of Electrical Engineers).

The Group was formed in 1958 and held its first General Meeting in October of that year. The committee immediately started discussions on the possibility of a publishing programme which would be of benefit to members; plans for a conference the following year were debated and a working party was set up to survey the extent and adequacy of published abstracts relating to the field of electronics. Group activities during the past ten years have included at least one visit each year to an organization working in the electronics or related fields. Both Governmental and industrial establishments have been visited and the members have greatly appreciated not only the talks and exhibits but the cordial welcome they have always received.

Annual Conference

The first annual conference was held in May 1959 and set the pattern for the future. The Group committee decided to balance two distinct types of paper in equal numbers. Of the first were to be those on technical subjects, particularly current studies and new techniques, in our own fields of interest, presented by experts who could make their subjects interesting and clear to an audience of varied technical background. Of the second type were to be those on the methods and administration of libraries and information sources. Speakers have been heard from the world of industry and official organizations, both from the United Kingdom and abroad. These conferences have been held in the idyllic surroundings of the Ashridge Management College; this year will be the first venture away from the College, but the committee is confident that the programme of papers to be read will prove as big a 'pull' as ever.

Publications

Since the early discussions ten years ago the programme of publications has grown; these, which were intended for the prime use and benefit of members, now have a much wider readership. One of the first ventures was the *Union list of periodicals on electronics and related subjects* which was compiled by Miss Rosemary England and contained over 1,400 titles showing up to ten locations within the membership for each title. However, with the development of the National Lending Library service, it was felt that a revision of this work would not be warranted. The *List of recently coined terms in electronics* was compiled because of the lack of current electronic terminology, particularly of acronyms, in technical dictionaries; this has gone into three editions and been sold all over the world. A new and completely revised edition is now well under way and should be available shortly. One of the most successful publications has undoubtedly been the *Handlist of basic reference material for librarians and information officers in electrical and electronic engineering*, again having world-wide sales. There have been five editions since the first, which was published in 1959, the most recent being in January of this year. Each issue has been an improvement on the preceding one by the inclusion of more standard titles, new sections and the addition of subject and author indexes. From the Group's foundation the *Group Newsletter* has regularly been sent to members keeping them informed of visits, and including résumés of activities, summaries of the papers read at the annual conferences and amendments to another of the Group publications, *Aslib Electronics Group Membership List*. Both of these publications have been the onerous task of Secretary Mrs Betty Taylor. A new issue of the *Membership List* will be ready shortly and a copy will be sent to each member.

Visits and Meetings

A programme of visits is arranged each year, and these are announced in the *Newsletter*. During the past year visits were arranged to the Post Office Research Station, the Standard Telecommunication Laboratories, and the Ministry of Technology Reports Centre. The arrangements for these highly successful visits are made by Mr Ken Spencer of the Ministry of Technology HQ Library Services. Suggestions for future visits and papers for meetings would be gratefully received.

Further information relating to the Electronics Group can be obtained from the Honorary Secretary, Mrs Taylor, Head of Information Services, Plessey Telecommunications Group, Ericsson Telephones Limited, Beeston, Nottingham.

Future supply and training of librarians

Following on the Report submitted to the Secretary of State for Education and Science by the Library Advisory Councils for England and Wales (published 16th December 1968), the Secretary has announced that, for the time being, no new full-time courses in librarianship will be approved in colleges of further education where none already exists. Where new courses, such as for a CNAA degree in librarianship and information science, are approved, a suitable adjustment will normally have to be made to the numbers enrolled for other full-time courses in librarianship in the same institution to ensure that there is no significant increase in its output of qualified librarians.

Fédération Internationale de Documentation

The Annual Report (FID 441) of the Secretary General, *FID in 1968*, has just appeared. It records programme activities, co-operation with other organizations (involving about fifty international ones), the financial situation, etc. An increase in membership during the year brought it to forty-six National members. A new President, Mr R. E. McBurney (Canada), took office this year. Copies of the Report can be obtained by Aslib members from the FID, 7 Hofweg The Hague, Netherlands.

FID Central Classification Committee. Sub-committee on Mechanization

In a meeting held on 13th March, presided over by M. Rigby (USA), some of the items agreed upon were:

(*a*) Future meetings on mechanization would be arranged, if possible, during the Rome technical meeting (September/October 1969); a second Seminar (the first was held in Copenhagen in September 1968) in mid-1970, possibly in Frankfurt/Main; during the thirty-fifth FID Conference in Buenos Aires in 1970.

(*b*) A recommended list of substitutes for UDC auxiliary symbols in computer systems should be prepared.

(*c*) A manual for automated information indexing and retrieval with UDC should be published.

Engineering Index Inc.

COMPENDEX (Computerized Engineering Index) has been announced as a monthly EI service starting from March 1969. Each magnetic tape will include the references (around five thousand) published in the *EI Monthly*, giving the following elements: EI number, title, author and citation, an abstract, a subject heading (and a sub-heading, where used). For further information write to Engineering Index Inc., 345 East 47th Street, New York, N.Y. 10017.

Excerpta Medica Foundation

This well-known organization in Amsterdam, which publishes thirty-three monthly journals of abstracts in the bio-medical field, has recently mechanized its operations with the installation of a NCR 315–RMC computer and CRAM units for auxiliary storage. The computer-aided typesetting of the journals is carried out by Digiset Electronic Composition.

From the 200,000 articles scanned in the annual coverage of 3,000 periodicals some 80,000 abstracts are prepared and stored in data banks. During the past few years they have compiled a thesaurus of 40,000 preferred terms and about 500,000 synonyms and word forms. Thus in addition to providing duplicate tapes of the current data bank store they can supply citations and the corresponding abstracts on specific subjects as part of a SDI service.

The Foundation has been awarded a grant of more than one million dollars to develop, in collaboration with Leyden University (IBM 360–50), an on-line bio-medical information network. Further information is obtainable from the Branch Office in London (Chandos House, 2 Queen Anne Street, W1).

Documentation Research and Training Centre, Bangalore

The Seventh Annual Seminar will be held in December 1969 with Dr S. R. Ranganathan as Director. The areas to be included are 'Subject analysis', 'Quantification' and 'Translation service', and documentalists are invited to contribute papers and participate in the Seminar. The ORTC is sponsored by the Indian Statistical Institute (112 Cross Road 11, Malleswaram, Bangalore 3).

Postal information

We have received a copy of *Die Postleitzahl* issued by the Deutsche Bundespost. It provides area codes both for Western and Eastern Germany in one alphabetical sequence of towns and villages with indications of location in West or East. The list can be consulted in the Aslib Information Department.

Mechanized information storage and retrieval systems

The Second International Conference at Cranfield (the first was held in 1967) has been fixed for the period 2nd–5th September 1969. The theme will be the economic aspects of mechanized systems, costs being related wherever possible to economic benefits. Mr Cyril Cleverdon is the Conference Director and all applications should be sent to him (The College of Aeronautics, Cranfield, Bedford).

The Robinson Medal of the Library Association

This Award is based on a trust fund left by the late Mr Frederick Robinson, and is intended to mark the originality of firms and individuals in devising new and improved methods in library technology and any aspect of library administration. The first Award was announced on 9th May and goes to the Mansell Information/Publishing Ltd for their 'development of an automatic camera and associated techniques for use in producing book catalogues from library cards or other sequential material'. It was by these methods that Messrs Balding and Mansell succeeded in producing the 263-volume *British Museum Catalogue of Printed Books* in the five years ending 1966. They are now well advanced in publishing the *National Union Catalog, pre-1956 Imprints,* for the Library of Congress (see *Aslib Proceedings,* **21** (2), p. 53, February 1969).

The runner-up for the new Award is Mr Lawrence Ardern, Deputy Librarian of the University of Strathclyde, who developed a closed-circuit television system as a link between the Chemical Engineering Building and the Main Library of the Manchester College of Science and Technology.

Planning library services

The Library of the University of Lancaster has organized a residential seminar to take place from 9th to 11th July. The thirteen speakers will be giving papers under the headings Problems of library planning, Techniques, and Data collection and evaluation. For further details write to Mr M. K. Buckland, University Library, Bailrigg, Lancaster.

BRIEF REVIEWS

SCIENTIFIC Information Notes. v. 1, no. 1/2, April 1969, New York, Science Associates/International, Inc. $12 per annum.

The National Science Foundation started issuing a most useful periodical with the above title in 1959 and it ceased publication at the end of 1968. It is now being carried on in an extended form by a commercial publisher. There will be six issues a year, although the first was a double number. While it includes all the old features the headings, slightly altered, are now News, Hardware/Software, Education and Training. New features have been added: In the Literature, Dissertations-in-progress, Personality Profile, Information Center Profile.

UNIVERSITY OF CAMBRIDGE. First Report of the General Board's Committee on Libraries. Cambridge University Reporter, v. 109, no. 29. 28th March 1969. p. 1190–1316.

This account of library facilities in Cambridge, following as it does the Shackleton Report for Oxford and the Parry Report, helps to provide a general view of our academic libraries. It describes the tripartite system of a University Library, departmental and College libraries. In an appendix detailed figures for size, holdings, etc., are given for the University Library and sixty-two departmental libraries. The twenty proposals which are made include such questions as the role and internal organization of departmental libraries, training of library staff, reader and information services, the co-ordination of library facilities, and the status of the Scientific Periodicals Library (formerly the Philosophical Library).

AMERICAN LIBRARY ASSOCIATION. The use of the Library of Congress Classification. Proceedings of the Institute held in New York City, 7th–9th July 1966. Ed. by R. H. Schimmelpfeng and C. D. Cook. Chicago, ALA, December 1968. 260 p. $6.50.

At this conference practising cataloguers and Library of Congress staff covered the nature and use of the LC Classification by demonstrating the techniques on the basis of actual book titles and the schedules. Special problems in the classes for literature, science and technology, the social sciences were discussed. Guidelines for changing from other classifications to LC were given as well as the costs and personnel that would be involved, both in academic and public libraries.

GUNZENHÄUSER, R., *ed.* Nicht-numerische Informationsverarbeitung. Wien, Springer-Verlag, 1969. 529 p. DM 118.

This is a typical German *Handbuch* which tries to cover systematically the use of digital computers in the handling of non-numeric forms of information, with contributions by twenty-seven authors. Only one section (out of six)—computers in the handling of language and documentation—is broadly relevant and only two chapters, the one on data processing systems, the other on library housekeeping, fall directly in our field.

The chapter on housekeeping by Lingenberg treats the mechanization of ordering, periodicals control, cataloguing, loan and their integration into one system. It also provides a well-selected bibliography.

The other four chapters deal with the machine analysis of natural language, the construction and use of computerized dictionaries, machine translation and the statistical analysis of texts.

FORECAST 1968–2000 of computer developments and applications. Copenhagen, Parsons & Williams, Inc., 1968. 64 p. (Available from Parsons & Williams, Nyropsgade 43, Copenhagen V at $12.50.)

This long-range forecast, based on an intuitive forecasting technique, is the result of two questionnaires circulated to the participants of an international seminar on file organization held in Denmark in November 1968. Predictions are made of the dates by which a variety of computer applications and developments will be introduced. Developments covered include 'briefcase' computers (between 1975 and 1981), oral input to the computer (1976–1983), and computers learning from experience (1980–1989). Forecasts for computer applications include recording of scientific and other advances in central files (1979–1986) and obsolescence of book libraries for general factual information (1985–1998).

Bohumir Buncl

It is with much regret that we record the death of B. Buncl of the Czech Centre for Scientific, Technical and Economic Information (UVTEI), where he was due to retire shortly. He was Head of the Czech Group which came over for the Second Anglo-Czech Information Symposium held in London in May 1969 under the auspices of the Ciba Foundation, OSTI and Aslib.

Aslib Directory, volume 1

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EXPERT AND LAYMAN IN CONTEMPORARY SOCIETY:

PROBLEMS OF COMMUNICATIONS AND FUNCTION

The Third Aslib Annual Lecture

delivered by

BARBARA WOOTTON

(*the Baroness Wootton of Abinger*)

CHAIRMAN: THE RT. HON. THE LORD SHACKLETON

Senate House, University of London, 23rd April 1969

I

AS a past President and present friend of Aslib, I count it a pleasure as well as an honour to be invited to give an Aslib lecture. The subject that I have chosen—the relations of expert and layman in contemporary society—will, I hope, commend itself as being at once highly topical and highly controversial.

In a world in which the pace of both technical and social change exceeds all precedents, it is hardly surprising that the relations of expert and layman should be somewhat confused. In a completely autocratic society the resulting problems may be solved by total abdication of judgment on the part of the layman. It is for him to do (as he is told) and die, not to reason why; whereas it is of the essence of democracy that at *some* point, the layman has a right to be heard, and that on *some* issues his judgment must be final. In our own case, the rise of consumer organizations, and the sudden popularity of the word 'participation' are symptomatic of the layman's struggle to assert himself.

The relations of expert and layman may be classified into three groups; and accordingly my lecture, like Gaul, will be divided into three parts, each concerned with one of the three. First, there is a large class of cases in which the layman makes use of articles or services with little or no understanding of how these work, and in which he makes no claim to challenge the expert's superior knowledge. Second, there are cases where professional and amateur function side-by-side in similar or identical roles. Third, and perhaps most interesting, is the field in which the line between expert and layman is not clearly drawn, and in which dispute rages over the boundaries of their respective territories.

In the first category, the problems are largely matters of communication, failure in which is at best tiresome and at worst dangerous. Perhaps I may begin with a few homely examples. The instruction card relating to my television set tells me that if a horizontal or vertical band of bright light appears upon the screen, I must switch off at once and inform my dealer. After some years' service such a band did make its appearance and accordingly I switched off promptly. The notice was so imperious that I fully expected to see the set go up in smoke. After a time, since nothing untoward had occurred, and I much wanted to see the current programme, I ventured timidly to switch on again. The band had disappeared, not, however, for very long. After its second appearance, I switched off again and duly informed my dealer, who, however, showed singularly little interest. Eventually, when the engineer came to put things to rights, I extracted the information that continued use might have damaged the tube. Why not say so?

Again, I am instructed that I must on no account use the starter switch on my electric polisher until I have switched on at the main. Actually this is an instruction which it is very easy to forget. But I am left completely in the dark as to the consequences, should I inadvertently break this rule. Will the instrument be damaged, the fuse be blown or the operator electrocuted? And why, to take another example, is it customary to prescribe that medicines should be taken after meals? When one is dining out, one may well be reluctant to produce pills, and even more reluctant to produce a bottle, in the presence of other people. It would be much more convenient to deal with the matter before leaving home. Faced with this problem myself, I noticed that the words 'after meals' were printed on the labels and might therefore be a routine instruction unrelated to the particular drug in question. On raising the matter with the appropriate expert, I found that this is indeed the case, and that the formula 'after meals' is just a device for jogging the memory. 'Before meals' would have done equally well. Why not say so?

Consider also the plight of the mechanically innocent motorist studying a typical motor manual. If he worked precisely to its rules for care and maintenance, no time would be left for driving. Nor is it helpful to be told that 'the purpose of the brakes is to retard the progress of the car', if the next sentence plunges into details about 'cams' and other engineering features in terms which are unfamiliar to the great mass of technically unsophisticated motorists. If only the experts, instead of confining themselves to unqualified 'do's' and 'don'ts', would take us more into their confidence, we should be able to make much more intelligent use of the innumerable and potent weapons which they put into our hands.

More serious is the hopelessly hit-and-miss character of communication between doctor and patient or patient's relatives. It is now more than five years since the Cohen Committee produced its report[1] on Communication between Doctors, Nurses and Patients, carrying the optimistic sub-title 'An Aspect of Human Relations in the Hospital Service'. Among the Committee's principal recommendations was a proposal that every patient in hospital should be assigned to a 'personal doctor' who should identify himself as such to the patient; should listen to the patient's problems; explain what is the nature and purpose of investigations and reassure him about his treatment and its aftermath'. The Report also emphasizes that 'arrangements for relatives to see the doctor should be precise and made widely known'.

It is, unhappily, to be feared that, at least judging from my own recent experience, this Report remains a dead letter. It so happens that in the past seven years, owing to the serious illness of three of my closest friends or relatives I have had, in two of the three cases as next-of-kin, extensive contact with hospitals and consultants—amounting altogether to three London teaching hospitals, four provincial hospitals, two nursing homes, and six consultants. In one of these cases on a certain day the patient was given no breakfast, and not till he asked the reason, was he told that he was about to undergo an operation. No message reached the next-of-kin. So much for 'explaining the nature and purpose of investigations' and 'reassuring (the patient) about his treatment'. As for arrangements for the relatives to see the doctor 'at precise times made widely known' nothing of the kind was ever done in my experience either for NHS patients or for those in private wards. Relatives were left in every case to pick up what they could by waylaying registrars, junior hospital doctors or ward sisters—or, very rarely, a consultant—a procedure far too daunting for the more timorous among us. Nor are shortage of staff and pressure of work adequate excuses for this failure of communication. Much irritation and some waste of time must have been caused by inquiries addressed to the wrong person, all of which could have been obviated had it been made clear who the right person was, and where and when he could be approached.

Nor is it only in the National Health Service that communication between expert and layman is so precarious. Similar impediments also obstruct the free flow of important communication throughout the social services. For example, only a small proportion of those entitled to rate rebates are alive to their rights; and, although the situation has somewhat improved since the Department of Health and Social Security embarked on a vigorous campaign of enlightenment, there are still many pensioners unaware of the circumstances in which they are entitled to claim supplementary benefit.

II

I turn now to the second type of relationship between expert and layman—that in which they work side by side. In the world of sport, open golf championships have long been customary, and we are now getting used also to open Wimbledon. Outside this field, however, it is unusual to find professional and layman discharging identical, or nearly identical, functions. The one big exception in this country is the magistracy. Our magistrates' courts are staffed by some sixteen thousand lay Justices of the Peace, and about forty-eight stipendiaries who serve in London and a few other big cities. Both professional and layman enjoy the services of a legally qualified clerk, and the powers of both groups are virtually identical, except that one stipendiary can, whereas one justice cannot, sit alone. (Two will do, provided that they can agree.) These lay magistrates, for whom, incidentally, there is no parallel outside this country, have discharged a variety of functions during the past 608 years, for 605 of which they received no training whatsoever. Today they are required to take a prescribed course of basic training, to sit in court as observers before adjudicating, to visit at least two penal institutions and to engage in discussions of sentencing policy. The professionals, on the other hand, must be either barristers or solicitors of some years' standing, but need never have set eyes on any penal institution or have paid any attention to the business of sentencing. It is an odd equation.

Although it is now twenty years since Lord Merthyr, the present Chairman of the Magistrates' Association, argued in a minority of one on the Royal Commission on the Justices of the Peace[3] that the day of the lay justices is, or should be, over, there are no signs that they are being ousted by their professional colleagues. The number of stipendiary magistrates does not increase. Lay benches are, of course, inexpensive; but that is perhaps not the only reason for their survival. You may have noticed that up to this point I have attempted no definition of an expert, it being implied that his distinguishing characteristic is the fact that he is paid for his services. Payment, however, normally implies a certain standard of competence, and the expert's superior efficiency should be empirically demonstrable, if not actually measurable; but insofar as a court is required to decide the issue of guilt or innocence, this is, and always will be, impossible. Only when the offender admits his guilt, or another man admits responsibility for the crime of which the accused has been found guilty, can that decision be proved right or wrong. Generally speaking, no one except the actual criminal himself can ever know with certainty whether the right man, or the wrong one, has been convicted: from which it follows that no one can demonstrate his personal success in making correct judgments on this issue.

In the absence of any empirical test, some light may be thrown upon the rightness or wrongness of a decision by analysis of the mental processes which led up to it. At least it can be said that a verdict which is reached by a careful weighing of the relevant evidence is more likely to be right, than one which is influenced by such irrelevant factors as prejudice against the defendant's race, susceptibility to a pretty girl, or even dislike of the law which the court is supposed to be applying. Suitable training can perhaps alert the lay magistrate to the risk of being influenced by these irrelevancies, while simple psychological experiments may put him on his guard against the fallibilities of both observation and memory. Experience may also endow him with a certain skill in detecting the inconsistencies of witnesses. But the absence of any certain criterion by which to judge performance necessarily sets a close limit to what can be achieved by training. True professionalism in the assessment of evidence can only be acquired in circumstances in which it is possible to check the correctness of the results arrived at. It follows that there is no reason to suppose that in determining questions of guilt or innocence the conscientious and intelligent layman is in any way handicapped by comparison with a supposed professional. It follows also that in this area there is little or nothing to be learned from experience. The value of experience is that it enables us to profit both from our mistakes and from our successes. But if neither the mistakes nor the successes can be detected, the experience is useless. As now the most experienced Justice of the Peace in London, I recognize this with regret.

The impossibility of substituting any genuine professionalism is as good a reason as any for retaining the lay magistracy—at least so far as the determination of guilt or innocence is concerned. (Sentencing, of which I shall have more to say in a moment, is another matter.) If, then, it is legitimate to argue that amateur magistrates are as competent as any professional in deciding issues of guilt or innocence, can the same be said of juries in the higher courts? The jury may indeed be said to be the apotheosis of amateurishness in this country. To be called for jury service is an exceptional event in most people's lives, and one that is unlikely to occur with any frequency; and the environment in which a juror is required to perform his function is unfamiliar, and indeed artificial. Juries, moreover, are expected to carry in their heads without benefit of transscript, tape recorder or even facilities for note-taking, evidence, including often highly technical material, that may be spread over several days or even weeks; and the problems with which they are faced are often much more complex than those which normally arise in the magistrates' courts. Even the most conscientious and intelligent juryman, therefore, is likely to be less well equipped than the average justice of the peace to arrive at a correct verdict; nor, for that matter, is there any guarantee that every juror is either intelligent or conscientious: whereas some attempt, at least, is made to ensure that these qualities are present in both professional and lay magistrates.

The mental processes by which a jury arrives at its verdict are never officially divulged, and the hallowed secrecy of the jury-room makes any systematic investigation of this subject impossible; but occasional indiscretions or interviews with ex-jurors hardly strengthen confidence that juries always arrive at their conclusions by rational inferences from the relevant data. Cases have been quoted of a juror who refused to convict on finger-print evidence because 'she did not believe in it', and of others who were reluctant to convict a drunken driver unless they could have an assurance that he would not lose his licence. Meanwhile, in the United States, extensive research[3] has recently been undertaken into the extent of agreement or disagreement between the jury's verdict and that which the presiding judge would himself have given. In a series of 35,716 criminal trials, disagreement as to verdict was recorded in 22 per cent of the cases. In 19 per cent the judge would have convicted where the jury acquitted, and in 3 per cent it was the other way round. While it is by no means certain that the judge's verdict is in every case to be preferred to that actually recorded by the jury, at least one can be confident that the judge would do his best to avoid being distracted by irrelevancies, and to reach a decision in the light of the admissible evidence and of that alone. In any case such a discrepancy throws a rather sinister light upon the reliability of verdicts being 'beyond reasonable doubt'. It is, however, fair to add that in many American states there is no judicial summing-up, so that juries have to make the best they can of the evidence without guidance from the bench. For this reason, similar researches in this country might show a somewhat smaller discrepancy.

In recent years the reverent adulation which the judiciary has long been accustomed to pay to the jury system has worn rather thin; and there have been strong criticisms by the police that men whom they firmly believe to be guilty go free. Consequently, hasty, not to say panicky, legislation now permits a jury to bring in a majority verdict. Unfortunately, however, respect for the sacred privacy of the jury-room is still strong enough effectively to resist any serious and comprehensive investigation of what goes on there. Yet it seems extraordinary that decisions that vitally affect a man's standing in the community, and as often as not his whole future life, are reached by a process which is veiled in mystery, and in which, on the face of it, irrational elements seem only too likely to be influential. How much longer do we have to wait for the facts to be uncovered by recordings of a sample of jury discussions? Many of us suspect that in contemporary conditions, a haphazard collection of laymen is not a suitable instrument for distinguishing between the guilty and the innocent; but such guesswork is a miserable substitute for concrete data.

After the verdict—sentence. It could well be said that at present it is always a layman who pronounces sentence. In the magistrates' courts, with the rare exception of those in which a stipendiary officiates, this function devolves upon the justices, about whose amateur status there is no dispute. In the higher courts (as also in the case of stipendiary magistrates), Recorders, Chairmen of Sessions, and even Judges of Assize may be classed as laymen in their sentencing capacity, inasmuch as their professional qualifications do not include any training in this particular function. Indeed it is only in the reign of the present Lord Chief Justice that regular conferences have been held for discussion of sentencing problems and practice in sentencing exercises.

Today, in every sentence, there are probably three distinct elements—often very difficult to reconcile with one another. The first objective is to mete out to the offender the punishment that he deserves; the second is to induce him to desist from future criminal activity, or, in cases where there seems little hope of this, to confine him in a place where he is no threat to the public; and the third is to discourage other people from copying his example.

For the discharge of the first of these functions, only minimal training is possible; because in this matter also, as in the determination of guilt, there can be no objective proof of the rightness or wrongness of any decision. The measure of a man's wickedness is a matter of opinion. The most that can be done is to establish some kind of agreed tariff so that comparable offences do not incur wildly different penalties, and in practice this is the principal topic of discussion in sentencing conferences. The success of a sentence in preventing recidivism, on the other hand, can be objectively measured; and, likewise, measurement of the deterrent effect of sentences upon potential offenders, though very difficult, is not inherently impossible. (It is, for instance, fairly clear that the introduction of the breathalyzer had, at least for a time, a deterrent effect upon drinking drivers.)

In recent years increasing attention has been given to the second of these three elements: many researches have been undertaken and many more are in progress which trace the after-careers of convicted persons and seek to relate these to the sentences imposed upon them. In the light of the information thus obtained attempts are made to predict the occurrence or non-occurrence of recidivism. Although the results are not spectacular, neither are they insignificant. It has been demonstrated, for instance, that first offenders guilty of housebreaking tend to be better subjects for probation than thieves, who appear to be better dealt with by way of fines. Again, an investigation in Scotland shows that short terms of imprisonment tend to be less effective than either fines or longer prison sentences. These and similar findings, which are necessarily expressed in statistical form, do not constitute an authoritative book of rules for sentencers. But they are sufficiently valid to deserve consideration in marginal cases. In so far (but only in so far) as the object of a sentence is to turn the person upon whom it is imposed away from further crime, sentencing may well be in process of transformation from a hit-and-miss art into a respectably established science.

This prospect, I suggest, makes it unlikely that the lay justices will survive at least in their present form for another six hundred years. At present the findings of penological research reach few of those to whom they might give practical help. Conceivably, the present generation will be succeeded by a population that is more research-minded, numerate as well as literate, and able to interpret statistics as easily as to read English prose. But it is more probable that, as sentencing becomes more scientific, it will eventually reach the status of a professional discipline beyond the reach of the layman. In that event one of two things will follow. Either the lay magistracy will disappear altogether, or they will be shorn of their sentencing function, which will (as already in California) be transferred to an independent expert body; and the higher judiciary likewise will either have to renounce their role as sentencers or will be obliged to include mastery of the advances in penological knowledge as one of their necessary professional qualifications.

III

My third category—that in which the boundary between expert and layman is not clearly, or appropriately, drawn—is best illustrated from the world of politics. In that world the confusion in varying degrees affects Ministers, Civil Servants and the electorate. To begin with Ministers. Before they entered Parliament, members of the Government may have followed any profession or none: yet in the former event it is unlikely that they will occupy an office to which their professional qualifications might be considered relevant. Our first Minister of Health was a doctor, but the precedent has not been followed, and it is exceptional for a teacher to be Minister of Education. Moreover, in an age in which practically every branch of the business of government becomes more and more complex and more and more technical, the custom of a succession of 'Cabinet reshuffles' within the life of a single Government would seem more and more inappropriate if Ministers are to know their business. Yet it shows no sign of withering away. The present Government has been in office since March 1966. During the three years to March 1969, apart from the Prime Minister, the only members of the present Cabinet who have remained in the same office throughout are Lord Gardiner, the Lord Chancellor; Mr. Healey, the Secretary for Defence; Mr Ross, the Secretary of State for Scotland, and Mr Diamond, the Chief Secretary to the Treasury. Mr Michael Stewart has dodged backwards and forward between the Foreign Office and a somewhat ill-defined position as First Secretary of State. His first spell in the Foreign Office lasted four months; then, after a year as First Secretary of State and Secretary of State for Economic Affairs, he returned to the Foreign Office in March 1968, taking Commonwealth Affairs also under his wing seven months later. The Box and Cox act performed by Mr Callaghan and Mr Jenkins is well enough known. Mr Crossman has been successively Minister of Housing and Local Government (four months), Lord President of the Council and leader of the House (two years and two months) and since October last Secretary of State for Social Services, in which capacity he has incidentally swallowed the entire

Ministry of Health. In consequence Mr Robinson, who, though never in the Cabinet, had been Minister of Health continuously since the previous Labour Government took office in the autumn of 1964, and who was generally regarded as remarkably successful in that role (even the BMA gave him a farewell dinner), found himself metamorphozed into the newly created office of Minister of Land and Planning in Mr Greenwood's Ministry of Housing. Mrs Castle, after two years in the Ministry of Transport, during which she hatched an extremely lengthy, complicated and controversial Bill, was abruptly translated into the Ministry of Labour with a change of title to First Secretary of State and Secretary of State for Employment and Productivity two days later. Mr Richard Marsh, after two years as Minister of Power, was moved to the seat that Mrs Castle had vacated, and was left to cope, as best he could, with the remaining stages of her Bill. Some of the changes must have involved very long jumps. Mr Greenwood, for instance, leapt from Overseas Development to Housing and Local Government. Mr Roy Mason has had a remarkably varied career, beginning with nine months as Minister of State, Board of Trade, graduating to Minister of Defence for Equipment (fifteen months), thence to Paymaster-General for two months, and finally (at least finally so far) to Minister of Power. He surely must by this time have become what in another context is called a 'good allrounder'.

Does any of this make sense? It is hard to believe that it does. No business could tolerate such quick-change acts amongst its chief executives. Nevertheless, a Minister who has survived well over two years in the same office recently said to me that, after two years in the same post, a Minister has probably given his best and is unlikely to have much more of value to contribute. Such restlessness inevitably creates the impression that to be head of a great Government Department is not a serious undertaking: that there is no more to be learned in it than what can be mastered in a few months; and that Ministers are, in fact, little more than the mouthpieces for their senior civil servants.

The technical competence of these Civil Servants themselves, however, has recently been called in question by the Fulton Committee.[4] Within the Service, as at present organized, expertize, it is suggested, is undervalued in two ways—first by the practice of moving administrative or executive officers around from one post to another at relatively short intervals. Members of the administrative class seem, in fact, to be hardly less mobile than the Ministers whom they serve, except that their movement is more often within, than between, departments. A Report submitted to the Fulton Committee by a Management Consultancy Group showed that the administrators interviewed (other than assistant principals) had on the average held their present positions for no more than 2.7 years, and had averaged only 2.8 years in all their completed jobs, while the Executive Officers in Administrative divisions averaged 4.1 years in all completed jobs. A formidable list of 'adverse circumstances' consequent upon this situation is listed in this Report, including the failure of administrators to make adequate contact with sources of expert advice either inside or outside the Service. An example is even quoted of an officer who dealt with industrial matters, but had never visited an industrial firm.

In the second place, the relation between what have come to be known as the 'specialist' and the 'generalist' classes in the Service bears eloquent witness to the low esteem in which specialist, or indeed relevant, knowledge has hitherto been held in the Service. For example, newly joined assistant research officers are given no induction or training in the work or organization of Government. They are put straight on to the job for which they are specifically qualified and left to get on with it. Their career grade is that of research officer, the *top* range of which is £95 a year below the *bottom* of the principal pay scale in the administrative class. And while the assistant principal is given opportunity to rise to posts of principal assistant secretary and above, the assistant research officer never gets a chance of promotion to top management positions. As the Fulton Committee remarks: 'Since assistant principals, in contrast to assistant research officers, do not usually have qualifications or experience appropriate to the work of the department, this amounts to a discrimination against expertise'.

This is a damning sentence. The professional, scientific and technical classes in the Service now outnumber by about twenty to one the administrative class, which, however, successfully monopolises the top posts, and generally controls communications both between the specialist classes and Ministers, and between specialists in the Service and their opposite numbers outside. In defence of the administrators it is said that 'administration' or 'management' is a specialism in itself. Judging by the vast literature concerned with studies in management, the point must, I suppose, be conceded; although I must confess to a certain scepticism as to whether the subject has not been blown out beyond any reasonable relation to its solid content. But, be that as it may, there is one radical difference between the administrative and the specialist classes. Whereas the latter are required on recruitment to produce evidence of qualifications relevant to the work which they are to do (even a typist must demonstrate that she is able to type) the Management Consultancy Group stated in evidence to the Fulton Committee that 'nearly half the direct entry administrators we saw had degrees in Classics or History'. The so-called 'generalist' Civil Service administrators, in short, are the surviving representatives of the layman (even one might say of the 'gentleman') in the public service; and the Fulton Committee made short work of them with the sweeping condemnation that 'the cult of the "generalist" is obsolete at all levels and in all parts of the Service'. The layman, once again, is under threat.

Finally, let us look at what may be called the ultimate layman, namely the Parliamentary elector. In the world of politics, the outstanding change of the past half-century has been the dramatic improvement in the means of communication both from circumference to centre and from centre to circumference. In practice, however, communication inwards from public to Government has been much more effectively organized than its counterpart in the opposite direction. The Gallup Poll correctly forecast the voting in all seven post-war general elections, and has a hardly less remarkable record in relation to by-elections. Scientific sampling of opinion has undoubtedly reached a stage at which no politician can laugh its findings out of court or flatter himself with illusions of imaginary popularity. The messages certainly get through, though to what extent they are acted upon remains obscure.

Communication from politician to public, on the other hand, appears to be singularly ineffectual. The researches of Messrs Trenaman and McQuail indicate that political propaganda on television is highly unsuccessful in forming or modifying political opinion. The last-named authors,[5] in their investigation into the impact of political propaganda on television in the 1959 election, concluded that there were only exceptions 'of borderline significance, to the universal rule that the electorate was *not* influenced directly in its voting or political attitudes either by the amount of the political campaign to which it was exposed, or by the presence or absence of any part or of virtually all the campaign'. In the language of the communication engineers, that is to say, most political broadcasting is merely noise—a definition with which, I suspect, many of us would be happy to agree. Meanwhile a public which is exposed to more political discussion, and is probably more familiar with its political leaders than ever before, appears to be becoming apathetic.

For this development, I suspect, something more than the ineptitude of politicians as television performers is responsible. In the past half-century there have been profound changes in the content of politics, with the result that the electors are constantly presented with issues which they are in no position to judge. Ideally the relations between government and electorate (government in this context presumably having expert advice available on any issues with which it may be faced) should correspond to the division between ends and means. It is for the lay public to determine the ends of political action, while government's business is to choose the best available means for enabling those ends to be realized. But the real problem in practice is to determine where ends end and means begin. If the end is peaceful coexistence plus domestic security, is this more likely to be realized by keeping or withdrawing forces East of Suez? On which side of the line should educational policy on comprehensive versus selective secondary schools be classified? Would a reduction in governmental or private spending be the more likely to 'stabilize the economy'?

All one can say is that in recent years the electorate in this country has constantly been presented with issues which are instrumental rather than primary. Whatever the right division between the territory of the expert and that of the layman in politics, the present boundary is certainly wrong. In 1931 a National Government was formed with the object of maintaining the gold standard and averting financial crises. Within months this Government abandoned the gold standard and shortly thereafter invited the public in a general election to pronounce their verdict on this highly technical question. In the elections of the nineteen-fifties the Party Manifestos included a ragbag of specific proposals in domestic and foreign affairs, relating to unemployment, the social services, housing, the establishment of a Land Commission, the organization of transport by road and rail, the Common Market, and a host of others, all of which were matters of expediency rather than principle, and on none of which could a worthwhile judgment be reached without considerable study.

Since then political discussion has been almost completely dominated by the supposed urgency of 'stabilizing the economy' or 'getting Britain out of the red' or achieving a 'favourable balance of trade'. To all this the layman's response has been decidedly cool: the sense of urgency cannot be said to have been successfully communicated to the public at large. This failure of communication is, I suggest, largely explained by the difficulty of reconciling the image of Britain hovering on the brink of economic disaster with the facts that the great majority of the population is enjoying a higher standard of living than ever before, and that the value of equities on the London Stock Exchange recently reached an all-time high. Our rulers, moreover, never tell us just what will happen to the ordinary citizen, if and when the impending disaster occurs. This is an extraordinary omission, and one which puts the Government on a par with the makers of the TV set and the electric polisher to whom I referred at the beginning of this lecture. Shall we all be unemployed? Will the exchange value of the £ drop to zero? Will the cost of living be ten times higher than now? For years now we have been threatened with disaster, with only occasional interludes, in totally unspecific terms; but the continued rise in consumer spending proves that, except for the minority who have been hit by increased unemployment and the relatively defenceless groups whose incomes fail to keep pace with rising costs, the great mass of the public is, and has been for years, personally quite unaffected by the unfavourable balance of trade—for the simple reason that, in spite of the dreadful figures on the TV screen, everything goes on exactly as, if not a little better than, before.

Moreover, as if to make confusion worse confounded we are constantly urged to co-operate in policies which can hardly fail to outrage any unsophisticated layman's common sense. We must all work more diligently, we are told, because our economic survival depends upon increased production. Yet at the same time the price to be paid for our salvation must be an increase in unemployment. In other words, production can only be increased if more people are prevented from producing anything at all. How paradoxical can you get?

Small wonder, therefore, that the layman cannot make head or tail of these mysteries. At the same time the broad questions of principle on which he would be competent to pass judgment appear to have been settled over his head. All the major parties now declare virtually identical aims. They all want peace and prosperity as well as ruthless technological advance with (save for a few pious gestures) scant regard to the consequent destruction of amenities. No one proposes any radical upheaval in the framework of society or in the existing way of life. In vain may the voter look for significant differences in the underlying social and political philosophies of the competing political parties.

At least as late as the General Election of 1918 (and perhaps also that of 1945) this was not so. The Labour Party could fairly be described by the label 'socialist' which its opponents still continue so incongruously to apply to it. The demand for social equality and the old cries of 'the nationalization of the means of production, distribution and exchange', or 'production for use and not for profit' implied fundamental change in the social and economic order. But today, while the Labour Party may extol the virtues of planning and the Conservatives those of individual initiative and enterprise, these are but faint echoes of bygone battles. The programmes of the parties (and still more the measures which they enact when in office) appear with but few exceptions to be interchangeable. Under the present Labour Government social equality has been forgotten, and nationalization, once the foundation of socialist principle, has become merely a question of the most technically efficient pattern of management of particular industries.

Faced with highly technical issues, or paradoxical policies, and without any clear ideological differences between the rivals who seek his suffrage, the contemporary layman, it would seem, falls back on the choice of men rather than of political programme. At least in the General Election of 1966 the real issue seems to have been less concerned with concrete policies than with the question whether Mr Wilson and his colleagues, having survived eighteen months with a tiny majority, should, or should not, almost as a matter of fair play, have a further chance to prove themselves. Such a solution is not, in my view, altogether happy; but only the reappearance of clearly distinguished rival political philosophies can, I think, regain for the layman the place which Parliamentary democracy theoretically postulates for him.

The picture which I have drawn shows the layman in one sphere after another in retreat or in confusion. Inevitably the breakneck speed of scientific and technical advance is bound to make the inexpert public more and more dependent upon good communications between those who fashion, and those who use, the miraculous inventions of our time. So likewise does the less spectacular, but no less irreversible, progress of the social sciences threaten to oust the layman from the areas in which his right to speak has hitherto been unchallenged. 'All professions,' said Sir Patrick Cullen in Shaw's *Doctor's Dilemma*, 'are conspiracies against the laity'; and the economist, the sociologist and the psychologist are no exceptions. The advance of knowledge in their fields and the rise of new skills and new specialisms, inexorably threaten the amateur Justice of the Peace, the juryman, the Ministers of the Crown playing general post and the generalist Civil Servant; while even the most passionately held lay opinions on, say, the effects of television on public behaviour, or the efficacy of corporal punishment as a deterrent to violent crime, must eventually be tested by exact observation and rigorous experiment.

If my reflections this evening have wandered far and wide, that is because the problems of communication between expert and layman, and of their mutual relations, recur in all these diverse spheres, from the domestic economy to the Cabinet and the Courts; and, since we are all laymen in all but one—or at most two or three—of our activities, these problems cannot fail to be of universal concern.

REFERENCES

1 *Communication between Doctors, Nurses and Patients.* Prepared by a Joint Sub-committee of the Standing Medical and Standing Nursing Advisory Committees for the Central Health Services Council and the Minister of Health. HMSO, 1963.
2 Royal Commission on Justices of the Peace. *Report.* HMSO, 1948. Cmnd. 7463.
3 KELVEN AND ZEISEL. *The American Jury.* Little Brown & Co., 1967.
4 Committee on the Civil Service. *Report.* 1968, HMSO. Cmnd 3638.
5 TRENAMAN AND MCQUAIL. *Television and the Political Image.* p.233. Methuen, 1961.

SUBJECT RELATIONS IN SCIENCE/TECHNOLOGY LITERATURE

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THE analysis of citations has often been employed to indicate the use of the literature of science and technology. Citation is only an *indicator* of use, not an accurate measure, and like all such indicators has defects. Differences between indicators have been discussed elsewhere.[1]

Despite these defects, an examination of citations does enable one to sample acts of literature use within a large community. The study reported here was directed, in fact, to all United Kingdom authors of science/technology publications in a given year, and because of its width, and the type of analysis performed, is considered to be worth reporting. The study was primarily undertaken to obtain comparable information about social science literature, and this has been reported elsewhere.[2]

Method

The essence of the method used was to select a representative sample of recent UK publications, to examine each, and to record all literature citations found therein. The source items were of two kinds—publications recorded in the 1965 volume of the *British National Bibliography,* and titles in the 1965 edition of Toase: *Guide to current British periodicals.*

In each case, items were drawn only from Dewey classes 300 (excluding 340, law and public administration), 500 and 600 (excluding 640, domestic science). In Toase, every tenth title within these classes was selected, and all 1965 issues of the periodical were examined. In *BNB,* the population was stratified into three sections—periodicals, government publications, others—and every tenth item in each was selected. New periodicals so discovered were added to the Toase sample. The other items selected were individually examined, and the two strata are jointly described below as 'books, etc.'. The distribution of source items was as follows:

	Books, etc.	*Periodicals*	*Totals*
Dewey 300, Social science	256	76	331
Dewey 500, Science	118	30	148
Dewey 600, Technology	257	160	418
TOTALS	631	266	897

If our 10 per cent sample were truly representative, these figures imply that about 6,300 books, etc., in the classes examined, were published in the UK in 1965, of which 41 per cent were in social science, 59 per cent in science/technology. The number of periodicals published in the classes examined would be about 2,700, of which 29 per cent were in social science, 71 per cent in science/technology. The greater preponderance of periodicals in science/technology is evident.

At the time of selection, each source item was allocated to a class (guided by its classification in *BNB* or Toase). Each class was given a two-figure code, usually based on the appropriate Dewey number, but in order to keep it to two figures some social science codes begin with four rather than three. The complete list of subject codes used is given in Table 1, in which the number of source items in each class is also recorded.

Each source item was now examined, and for all citations found therein the following data were recorded in coded form:

subject class—as suggested by its title; in the case of a cited item appearing in a composite work (periodical, conference, etc.) the title of the composite work was classed, not the individual article
form of publication—eleven forms were recognized
year of publication—the date 1966 was used for publications 'forthcoming', 'in the press' and so on
country of origin
language.

The five sets of data were recorded on IBM punched cards for analysis. The results reported here are concerned only with the interrelations of subjects. The well-worn topics of date and language distribution will not be explored. Altogether 65,340 cited items were recorded. If our 10 per cent sample was reliable, this implies that there were about two-thirds of a million citations in 1965 UK publications in the subject classes examined. Overall, books accounted for 20 per cent of the citations, and periodicals 66 per cent. The relative distribution varied thus (in percentages):

	Social science	*Science*	*Technology*
Books	46	12	14
Periodicals	29	82	70
Other forms	25	6	16
TOTALS	100	100	100

Subject Distribution of Citations

In Table 1 the 65,340 citations are analysed according to subject. As can be seen from column H of this table, 90.5 per cent lay within the source subjects and 9.5 per cent within other classes. In all, 69.8 per cent of the citations were in science/technology as defined in our survey—39.9 per cent in science, 29.9 per cent in technology (including 17.1 per cent in medicine).

Science as a whole may be more prone to cite than either technology or social science—this is brought out by column J of Table 1, showing the number of citations per source item (average for science 135, for technology 55). Among the sciences, the number of citations per item was particularly high for class 56 palaeontology, and particularly low for classes 51 mathematics, and 58 botany. In technology, the number was particularly high for class 61 medicine, and if this were excluded the average for the rest of technology would only be 32.

Class 65 business, had a lower number of citations per item than any subject except mathematics. However, the implications of these figures must be accepted with caution—they will depend on the average size of source items that may vary from one subject to another.

Relations between source and cited subjects are presented in Table 2. The overall picture is as follows:

Citations from	*Citations to* science classes 50 *to* 59	technology classes 60 *to* 69	other subjects	totals
science	16,897	6,963	209	24,069
technology	2,684	15,142	979	18,805
social science	2,009	2,070	18,297	22,466
TOTALS	21,680	24,175	19,485	65,340

The top line of this tabulation implies that science sources cited science items in 16,897 out of 24,069 instances, i.e. 70 per cent of the time. We may describe this by saying that the *self-citation* of science as a whole was 70 per cent. In the same way, the self-citation of technology as a whole (15,142 out of 18,805) was 81 per cent. Apart from citing itself, science cited technology 29 per cent of the time, and other subjects less than 1 per cent. Technology cited science 14 per cent of the time, and other subjects 5 per cent. Social science cited science and technology equally—each about 9 per cent of the time.

In all, there were 21,680 citations to science items, of which 16,897 came from science sources. We may describe this by saying that the *self-derivation* of science was 78 per cent. In the same way, the self-derivation of technology was 62 per cent.

Self-citation is an indication of the degree to which a subject draws upon the literature of other subjects—the nearer to 100 per cent, the less dependence is there on other subjects. Self-derivation is an indication of the extent to which a subject contributes to the literature of other subjects—the nearer to 100 per cent, the less other subjects depend upon it. From Table 2 we can calculate these quantities for each class of science and technology. For example, there were 131 citations to class 50 from class 50, out of a total citation from class 50 of 1,140 (bottom line of Table 2), so that the self-citation was 131/1,140 or 12 per cent. There were in all 2,616 cited items in class 50 (last column of Table 2) and 131 of these came from class 50 sources, so that the self-derivation was 131/2,616 or 5 per cent. Figures for each class of science and technology are given below:

Class	*Subject*	*Self-citation per cent*	*Self-derivation per cent*
50	Science (general)	12	5
51	Mathematics	79	6
52	Astronomy	62	93
53	Physics	75	68
54	Chemistry	73	30

Class	*Subject*	*Self-citation per cent*	*Self-derivation per cent*
55	Geology, meteorology	52	79
56	Palaeontology	4	23
57	Biology	60	32
58	Botany	86	30
59	Zoology	38	65
60	Technology (general)	12	23
61	Medicine	61	70
62	Engineering	70	55
63	Agriculture	66	73
65	Business	46	68
66	Manufacture	47	91
69	Building	21	30

Low self-citations—indicating considerable dependence on other subjects—were found in sources classed 50 general science and 60 general technology (as might be expected), and also in classes 56 palaeontology, 69 building, and 59 zoology. The most self-sufficient class was 58 botany. Low self-derivations—indicating considerable contributions to other subjects—were found once again in general science and technology sources, and also in classes 51 mathematics, 54 chemistry, 56 palaeontology, 57 biology, 58 botany and 69 building. Least contribution came from 52 astronomy.

Detailed examination of Table 2 will suggest to interested readers what relations may hold between different subjects. Let us take as an example class 57 biology. The citations in biology sources were to biology itself (60 per cent), followed by chemistry (12 per cent), botany (9 per cent), general science sources (9 per cent) and medicine (7 per cent). Biology citations were only partly derived from biology itself (32 per cent). Other sources were medicine (41 per cent), zoology (8 per cent), palaeontology (5 per cent), geology (4 per cent) and manufacture (3 per cent). The citation links demonstrate the interplay between biology, other sciences, and medicine.

Interaction between any two subjects can be set out in tabular form:

	Percentage citations to				*Percentage citations from*			
	biology	*medicine*	*other*	*total*	*biology*	*medicine*	*other*	*total*
biology	60	7	33	100	32	41	27	100
medicine	23	61	16	100	2	70	28	100

Biology cited itself nearly nine times as much as it cited medicine, but was cited by medicine more than by itself. Medicine cited itself nearly three times as much as it cited biology, but was scarcely cited by biology at all. The two subjects appeared to be approximately the same in dependence on other subjects (self-citations 60 per cent and 61 per cent), but medicine contributed less to other subjects (self-derivation 70 per cent compared to biology 32 per cent).

Similar analyses of Table 2 may be made for other subjects. We conclude that, although citation as an indicator of use is biased (as shown[1, 2]), it may throw useful light on the degrees of relatedness among subject literatures.

REFERENCES

1 VICKERY, B. C. Indicators of the use of periodicals, *Journal of Librarianship*, 1, 3, July 1969, p. 170–82.

2 EARLE, PENELOPE, *and* VICKERY, B. C. Social science literature use in the UK as indicated by citations, *Journal of Documentation*, 25, ii, 1969, p. 123–141.

TABLE 1: *Source and cited subjects*

A	B	C	D	E	F	G	H	I	J
30	Soc. sci. (gen.)	7	2	9	1.0	76	0.1	0.1	37
31	Demography	4	1	5	0.6	461	0.7	0.8	60
32	Politics	29	12	41	4.6	4,207	6.4	7.1	173
33	Economics	83	14	97	10.8	3,254	5.0	5.5	51
35	Anthropol.	6	1	7	0.8	734	1.1	1.3	213
36	Soc. welfare	31	7	38	4.2	668	1.0	1.1	28
37	Education	51	15	66	7.3	1,675	2.6	2.8	66
38	Econ. of comm.	27	21	48	5.3	765	1.2	1.3	38
39	Soc. customs	7	2	9	1.0	482	0.7	0.8	46
40	Sociology	8	0	8	0.9	902	1.4	1.5	76
41	Soc. psychol.	2	0	2	0.3	300	0.5	0.5	45
42	Soc. survey	1	0	1	0.1	38	<0.1	<0.1	63
	TOTALS	256	75	332	36.9	13,562	20.7	22.8	—
50	Sci. (gen.)	6	2	8	0.9	2,616	4.0	4.4	143
51	Mathematics	23	2	25	2.8	1,617	2.5	2.7	5
52	Astronomy	7	1	8	0.9	1,111	1.7	1.9	208
53	Physics	16	4	20	2.2	5,177	7.9	8.7	235
54	Chemistry	16	3	19	2.1	4,174	6.4	7.0	90
55	Geol., meteor.	9	3	12	1.3	1,705	2.6	2.9	217
56	Palaeontol.	2	0	2	0.3	176	0.3	0.3	576
57	Biology	11	8	19	2.1	7,159	11.0	12.2	195
58	Botany	5	2	7	0.8	703	1.1	1.2	36
59	Zoology	23	5	28	3.1	1,569	2.4	2.7	95
	TOTALS	118	30	148	16.5	26,007	39.9	44.0	—
60	Technol. (gen.)	6	3	9	1.0	156	0.2	0.3	33
61	Medicine	65	27	92	10.3	11,148	17.1	18.7	127
62	Engineering	93	43	136	15.1	4,146	6.3	7.0	24
63	Agriculture	15	11	26	2.9	1,208	1.8	2.2	52
65	Business	37	25	62	6.9	350	0.5	0.6	9
66	Manufacture	33	45	78	8.7	2,350	3.6	4.0	58
69	Building	8	7	15	1.7	239	0.4	0.4	29
	TOTALS	257	161	418	46.6	19,597	29.9	33.2	—

Key and continuation of table on next page

A	B	C	D	E	F	G	H	I	J
00	General					1,058	1.6		
02	Libraries				U	34	<0.1	U	U
10	Philosophy				N	76	0.1	N	N
15	Psychology				U	790	1.2	U	U
20	Religion				S	242	0.4	S	S
34	Law, pub. adm.				E	1,442	2.2	E	E
43	Linguistics				D	22	<0.1	D	D
64	Dom. sci.					23	<0.1		
70	Art, arch.				A	177	0.3	A	A
71	Sport				S	22	<0.1	S	S
78	Music					249	0.4		
79	Dance, drama				S	59	0.1	S	S
80	Literature				O	214	0.3	O	O
90	Hist., biog.				U	1,157	1.8	U	U
91	Geography				R	439	0.7	R	R
92	Travel				C	100	0.2	C	C
93	Archaeology				E	70	0.1	E	E
	TOTALS					6,174	9.5		

KEY

A —subject class code
B —subject
C to F—source items
C —source books, etc.
D —source periodicals
E —total source items
F —percentage of source items

G to I—cited items
G —number
H —percentage of cited items (all subjects)
I —percentage of cited items (source subjects)
J —citations in all subjects per source item

TABLE 2: *Citations between science/technology subjects*

Source =	50	51	52	53	54	55	56	57	58	59	60	61	62	63	65	66	69	*Totals*	*Total citations to class*
Cited subject																			
50	131	18	232	163	112	13	102	338	14	242	1	763	82	30	39	172	2	2,454	2,616
51	47	90	20	15	16	7	1	7	1	—	—	254	230	18	1	1	10	718	1,617
52	—	—	1,035	14	1	—	2	—	—	—	—	—	19	2	17	16	—	1,106	1,111
53	24	—	168	3,505	21	857	—	3	1	2	—	39	148	6	2	278	—	5,054	5,177
54	9	—	79	268	1,254	39	332	439	—	60	127	330	107	11	10	409	1	3,475	4,174
55	94	—	1	2	1	1,351	126	3	—	14	—	2	13	24	—	14	30	1,675	1,705
56	—	—	—	—	1	—	41	—	—	1	—	1	—	132	—	—	—	176	176
57	138	—	—	11	5	285	343	2,278	19	578	7	2,903	122	76	—	230	—	6,995	7,159
58	21	—	—	1	—	6	—	357	213	3	—	—	1	73	—	25	—	700	703
59	114	—	—	—	—	12	140	45	—	1,011	1	50	1	39	—	103	1	1,517	1,569
60	2	—	1	1	—	7	—	—	—	—	36	—	11	—	5	33	2	98	156
61	229	1	2	—	292	3	56	263	1	690	25	7,805	24	—	3	147	226	9,767	11,148
62	25	—	122	712	7	11	3	2	—	2	—	54	2,279	—	13	822	—	4,052	4,146
63	107	—	—	6	—	3	—	39	—	3	—	14	—	886	—	57	—	1,115	1,208
65	3	5	—	—	1	—	—	—	—	—	9	8	12	—	237	12	—	287	350
66	1	—	3	—	1	1	1	—	—	—	18	5	51	2	20	2,143	1	2,247	2,350
69	67	—	—	—	—	—	—	—	—	—	—	10	48	10	41	—	73	229	239
TOTALS	1,012	114	1,663	4,699	1,712	2,595	1,147	3,774	249	2,606	224	12,238	3,148	1,309	388	4,462	346	41,686	45,604
Total citations from class	1,140	115	1,664	4,699	1,716	2,605	1,153	3,787	249	2,664	294	12,709	3,245	1,343	510	4,545	436	42,874	

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User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

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Items are available in the Aslib Library and may be borrowed unless marked to indicate reference copies.*

User Studies

TRUESWELL, RICHARD L.
Some behavioral patterns of library users; the 80/20 rule.
Wilson Library Bulletin, vol.43, no.5, January 1969, p.458–61.
Stock circulation patterns as a guide to book selection.

GIFFORD, CAROLYN, *and* BAUMANIS, GEORGE J.
On understanding user choices: textual correlates of relevance judgements.
American Documentation, vol.20, no.1, January 1969, p.21–6.
An empirical investigation of the role of documents in relevance judgements.

BOB, MURRAY L.
Evaluating the evaluators.
Library Journal, vol.94, no.7, 1 April 1969, p.1416.
A consumer's reaction to the Library Technology Program.

JANNING, EDWARD A., *and others*
Information needs of the ceramic industry: a users-need study; prepared for American Ceramic Society. Dayton, Ohio, University of Dayton Research Institute, May 1968.
74 p. (PB 179 672.)
2 microfiches.

BENEFICIARUL informatiei ştiintifice—obiet al cercetării.
Probleme de Informare şi Documentare, vol.3, no.1, January 1969, p.58–60.
Education of information users.

CARTER, ROBERT R.
Learning to look it up!
California Librarian, vol.30, no.1, January 1969, p.53–5.
Pasadena City College course in basic library procedures for junior students.

BURRELL, T. W.
Learn to use books and libraries: a programmed text. London, Clive Bingley, 1969.
105 p. (Programmed Texts in Library and Information Science.)

Library Systems

LOCKE, W. N.
Selling books in libraries.
College and Research Libraries, vol.30, no.1, January 1969, p.39–44.
Libraries of the future may also sell books and journals. A machine-based catalogue of bibliographic information would produce borrowing and purchasing details.

LANHAM, RICHARD
Marian the technologist?
SDC Magazine, vol.11, no.10, November 1968, p.2–9.
The present and future relationships between technology and libraries.

KLOTSCHE, J. MARTIN
The role of the academic library in urban development.
College and Research Libraries, vol.30, no.2, March 1969, p.126–9.
The urban university can help to resolve city problems; the library has obligations to serve part-time students, business and professional communities and the general public.

OTRUBA, LUDWIG
Hoschschulreform und Bibliotheken.
Biblos, vol.18, no.1, 1969, p.10–21.
Libraries and university reform.

COMMAGER, HENRY STEELE
The crisis of the academic library.
Wilson Library Bulletin, vol.43, no.6, February 1969, p.518–25.
The problem of rising costs and increasing demand.

FRANCIS, DEREK, *and* RAYMOND, BORIS
University librarians: shepherds of books or disseminators of information?
Canadian Library, vol.26, no.2, March-April 1969, p.144-7.

WETTERQVIST, MAJ
Svenska Institutets biblioteks- och dokumentationstjanst.
Tidskrift för Dokumentation, vol.25, no.1, 1969, p.1–4.
The Swedish Institute library and documentation service.

JACKSON, MILES M. Jr., *ed.*
Libraries abroad. Libraries in the United Arab Republic, by Mohammed M. Aman.
Journal of Library History, vol.4, no.2, April 1969, p.158–68.

VAN DER BRUGGHEN, W.
Samenwerking bij de ontsluiting van informatie.
Open, vol.1, no.3, March 1969, p.144-7.

Co-operation in collecting and disseminating information.

Administration and Management

BROSE, FRIEDRICH KARL-HEINZ
Allen's principles of management applied to library administration.
California Librarian, vol.30, no.1, January 1969, p.30-4.
Discusses the functions and activities of management described in *Louis A. Allen. The management profession, New York, McGraw-Hill, 1964*, as applied to library administration.

NISTOR, E., *and* ROMAN, E.
Despre conducerea ştiinţifică a unităţilor de documentare.
Probleme de Informare şi Documentare, vol.3, no.2, February 1969, p.80-7.
Scientific management criteria for documentation units.

STREATFIELD, DAVID R.
Decimalisation, metrication and libraries.
SLA News, no.89, January-February 1969, p.221-4.
Revised paper sizes and book prices, and replacement of obsolete textbooks are among the effects of metrication and decimalization in libraries.

WHITE, LUCIEN W.
University of Illinois award winning undergraduate library.
Illinois Libraries, vol.50, no.10, December 1968, p.1042-8.

WALKINGTON, ROBERT A.
Problems in planning medical libraries.
Bulletin of the Medical Library Association, vol.57, no.1, January 1969, p.5–9.
Problems of the American proposals submitted under the Medical Library Assistance Act of 1965.

KELLER, JOHN E.
Program budgeting and cost benefit analysis in libraries.
College and Research Libraries, vol.30, no.2, March 1969, p.156–60.

MCGRATH, WILLIAM E., *and others*
An allocation formula derived from a factor analysis of academic departments.
College and Research Libraries, vol.30, no.1, January 1969, p.51–62.
The authors derive a book fund distribution formula from a factor analysis of twenty-two variables which measure and quantify academic departments.

ORNE, JERROLD
The place of the library in the evaluation of graduate work.
College and Research Libraries, vol.30, no.1, January 1969, p.25–31.
Assessment of research collections, use of library personnel, systems for funding library operations.

WEBBER, OLGA
Trimming the clipping files by the 7 R's.
Special Libraries, vol.60, no.2, February 1969, p.82–6.
Seven rules for weeding clippings files.

MARWINSKI, FELICITAS
Ein Jahrzehnt Arbeit mit Zeitschriften: ein Bericht aus der Praxis der Thüringischen Landesbibliothek Weimar.
Zentralblatt für Bibliothekswesen, vol.83, no.3, March 1969, p.154–61.
A decade of periodical handling at the Thuringian State Library, Weimar.

SHAFFER, NORMAN J.
Library of Congress Pilot Preservation Project.
College and Research Libraries, vol.30, no.1, January 1969, p.5–11.
Library of Congress project to locate and compare deteriorating titles in various libraries.

MORLEY, WILLIAM F. E., *and* EMPEY, VERLA E.
Survey of Canadian rare-book departments and special collections.
Preliminary report—November 1968.
Canadian Library, vol.26, no.2, March-April 1969, p.109–25.

SVENSSON, MARIANNE
A V—media i bibliotek; en selektiv bibliografi.
Biblioteksbladet, vol.54, no.2–3, 1969, p.206–17.
Audio-visual media in libraries—a bibliography.

DROTT, M. CARL
Random sampling; a tool for library research.
College and Research Libraries, vol.30, no.2, March 1969, p.119-25.

CLEMENTS, D. W. G.
Survey of inter-library lending in eight local areas.
Journal of Librarianship, vol.1, no.2, April 1969, p.107–18.
OSTI survey, January 1968, covering academic, public and industrial libraries.

Printing and Publishing

COMPUTERIZED numeric proofreading for a linofilm phototypesetter.
American Documentation, vol.20, no.1, January 1969, p.94–7.
Application of computerized numeric proofreading to the third edition of *Crystal Data*.

THE SHADOW LITERATURE
Nature, vol.222, no.5188, 5 April 1969, p.39–40.
Study of the technical reports produced by public and industrial laboratories, undertaken by the Committee on Scientific and Technical Information.

FREE, OPAL M.
Commercial reprints of Federal documents; their significance and acquisition.
Special Libraries, vol.60, no.3, March 1969, p.126-31.
Includes a list of reprint publishers of federal documents.

DUNN & WILSON LTD.
The art and craft of bookbinding. [London], Dunn & Wilson, [1969?].
24 p., illus., glossary.

HÉBERGER, KÁROLY
Gépészeti tárgyu cikkek szóródása a folyóirat—irodalomban.
Tudományos es Müszaki Tájékoztatás, vol.16, no.2, February 1969, p.89–104.
Scattering of papers and articles on mechanical engineering in scientific and technical periodicals.

HALASZI, J.
The coverage of articles from Dutch biological journals in *Biological Abstracts*.
Wageningen, Centre for Agricultural Publishing and Documentation, 1968.
14 p.
Cover imprint PUDOC.

DOCKS, MARIE-CLAUDE
Unesco and copyright.
Unesco Chronicle, vol.15, no.3, March 1969, p.89-97.
History of Unesco's action in the field of copyright.

SULJAK, NEDJELKO D.
Right to translate and international copyright conventions.
Law Library Journal, vol.69, no.1, February 1969, p.47-57.
Conferences and conventions affecting copyright and translation.

STONE, MICHAEL G., *and* WARNER, MALCOLM
Planning and privacy: the computer threat.
New Scientist, vol.42, no.647, 1 May 1969, p.238-9.
Safeguards are proposed to protect individuals from the misuse of personal information stored in data banks.

Reprography

PLUMB, PHILIP W., *ed.*
The economics of microfilming and document reproduction. Papers given at Seminars held by the Microfilm Association of Great Britain, Cambridge, 27th September 1968, and Edinburgh, 18th November 1968.
Buntingford, the Microfilm Association, 1969.
55 p., diagrs. 21*s*.

MAIN features of electrostatic photocopiers designed for the use of material without a photo-conductive layer.
Office Machine Guide, no.77, April 1969, p.11-15.
Nine photocopier models manufactured by Rank Xerox are surveyed for the type of copy produced and the method used.

DOCUMENT reproduction survey. February 1969, editor: T. Hampshire.
FID News Bulletin, vol.19, no.3, March 1969, p.26–9.
A survey of new document reproduction equipment, with details of cost, manufacturers and addresses.

WRIGHT, G. H.
A review of the activities of the NRCd.
NRCd Bulletin, vol.2, no.1 and 2, 1969, p.5–8.
The work of the National Reprographic Centre for Documentation, established 1967.

BERRA, P. BRUCE, *and* WILSON, DEAN H.
Remote access to schematic drawings.
Information Storage and Retrieval, vol.4, no.4, December 1968, p.333-41.
Electronic information system for storing, transmitting, receiving and displaying electrical circuit schematics, binary coded for computer storage and transmitted over telephone grade communications lines.

NATIONAL COMMITTEE FOR AUDIO-VISUAL AIDS IN EDUCATION, *and* EDUCATIONAL FOUNDATION FOR VISUAL AIDS
A survey of overhead projectors, by A. H. Crocker. London, the Committee, 1969.
72 p., illus. (Experimental development unit: report no. 6.)

Subject Organization

TĂRĂBOI, VASILE
20 ani de activitate de informare şi documentare a institutului central de documentare tehnică.
Probleme de Informare şi Documentare, vol.3, no.1, January 1969, p.3–7.
Twenty years of the Central Institute for Technical Documentation, Romania.

SIEGEL, HEINZ
Bibliographische Tatigkeiten von Spezialbibliotheken der Bundesrepublik; mit Auswahlverzeichnis.
Inspel, vol.4, no.1, January 1969, p.13–18.
Bibliographical work of special libraries in the Federal Republic of Germany.

WALRAET, M.
Bibliothèques spéciales et centres de documentation: regroupement et restructuration.
Archives et Bibliothèques de Belgique, vol.40, no.1-2, 1969, p.13–33.
Regrouping and reconstruction of special libraries and documentation centres in Belgium.

VALENTI, MARIA, *and* CAROSELLA, MARIA PIA
Special libraries in Italy.
Inspel, vol.4, no.1, January 1969, p.28-34.

FISCHER, HERTA D.
Special libraries in Ghana?
Special Libraries, vol.60, no.1, January 1969, p.35–44.

OLIVERA, R. ISABEL
Libraries for the business community in Peru.
Special Libraries, vol.60, no.3, March 1969, p.138–45.
Considers business organizations, describes a survey of existing special libraries prepared by the Peruvian Librarians Association and presents information about academic training at the Graduate School of Business in South America.

KALLNER, ANDERS
Referenskort och samkatalog.
Biblioteksbladet, vol.54, no.2–3, 1969. p.222–7.
Reference cards or union catalogue—the Biomedical Documentation Centre.

SARGENT, CHARLES W.
Handling technical reports in the medical library.
Bulletin of the Medical Library Association, vol.57, no.1, January 1969, p.41–6.
Acquisition, processing and use of the tools which abstract and index technical reports.

KRUGLOV, C. L.
Nekotorye svoistva potoka nauchnykh dokumentov (opyt statisticheskogo analiza dokumental'noi informatsii na 'vkhode' otraslevogo tsentra).
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.12, 1968, p.3–11.
The flow of scientific documents; statistical analysis of documentary information in an electronics information centre.

*SCHUTZE, GERTRUDE
The social sciences; a bibliography of guides to the literature. Woodhaven, N.Y., the Author, 1968.
40 p. 36*s*.

STERN, WILLIAM B.
Soviet Russian legal periodicals; current or presumed to be current holdings of selected American libraries.
Law Library Journal, vol.62, no.1, February 1969, p.40–6.

Mechanization

GROSCH, AUDREY N.
Implications of on-line systems techniques for a decentralized research library system.
College and Research Libraries, vol.30, no.2, March 1969, p.112–18.

WOITSCHACH, MAX
Probleme der maschinellen Dokumentation und ihre Bedeutung fur die Entwicklung der Dritten Welt.
2 p.
Conclusion of the FID/OM Meeting, 5th–8th February 1969, Frankfurt-am-Main.

BOYLAN, MERELE N., *and others*
Automated acquisition, cataloguing, and circulation in a large research library. Livermore, Calif., California University, 1968.
89 p., diagrs., tables. (UCRL-50406.) $3.

LORPHÈVRE, G.
Progrès récents dans la mécanisation des bibliographies.
Bulletin de la Commission Belge de Bibliographie, vol.11, no.4, 1967, p.234–5.
Two methods for machine-produced bibliographies (1) at the Institut fur Landeskunde, Germany, and also for *Deutsche National Bibliographie*; (2) for a meteorological bibliography with a KWIC index in USA.

VARENCHIK, FRANKLIN S.
A computerized system for periodical subscription control.
Special Libraries, vol.60, no.2, February 1969, p.95–7.

ADLER, YU P., *and* STEIN, V. C.
Composition-property diagrams: representation of information for computers.
Information Storage and Retrieval, vol.4, no.4, December 1968, p.329–32.
Proposed method for reduction of information on a quarternary system for use in a computerized information retrieval system in metallurgy or science of metals.

PRICE, C. E.
Representing characters to computers.
American Documentation, vol.20, no.1, January 1969, p.50–60.
Six different character representation methods for input, storage and output.

Classification and Cataloguing

PACHEFSKY, REVA
Survey of the card catalog in medical libraries.
Bulletin of the Medical Library Association, vol.57, no.1, January 1969, p.10–20.
Influence of MeSH; prevalence of the divided catalogue.

TRUELSON, STANLEY D.
The need to standardize descriptive cataloging.
Bulletin of the Medical Library Association, vol.57, no.1, January 1969, p.21–7.

NITECKI, JOSEPH Z.
Speed cataloguing: prudence and pitfalls.
Library Journal, vol.94, no.7, 1 April 1969, p.1217–21.
A report on two years of successful experience in streamlining cataloguing at the University of Wisconsin-Milwaukee.

GULL, C. D.
Convergence toward common standards in machine-readable cataloguing.
Bulletin of the Medical Library Association,

vol.57, no.1, January 1969, p.28–35.
Three levels of standard are identified: fundamental, the character set; intermediate, MARC II; and detailed, the codes for identifying data elements.

MIKLÓS, KACZKOVICS
A tejiparral kapcsolatas szakirodalom osztályba sorolása.
Tudományos és Műszaki Tajékoztatás, vol.16, no.3, March 1969, p.199-209.
Schedules of a decimal classification for literature on milk.

ISTRATE, I.
Sistemul de clasificare înmagazinare şi regăsirea informatiilor la Institutul de Cercetări Chimico-Farmaceutice.
Probleme de Documentare şi Informare, vol.2, no.11, November 1968, p.700–16.
Describes the modified Beilstein classification used at ICCF for the classification of drugs, and compares it with UDC.

WHITING, BERNARD
A classification for baroque music. Liverpool, School of Librarianship, [1969?].
28 p. (Occasional Paper no.3.)

PORTLOCK, NYLAH
Nursing school library classification systems.
Special Libraries, vol.60, no.1, January 1969, p.32–4.

EVANS, MARTHA M.
A history of the development of Classification K (Law) at the Library of Congress.
Law Library Journal, vol.62, no.1, February 1969, p.25–39.

DONNACHIE, I. L.
Aids to recording (I)—The classification of industrial monuments: a guideline.
Industrial Archaeology, vol.6, no.1, February 1969, p.52–9.

Language and Indexing

COLLISON, ROBERT L.
Indexes and indexing: guide to the indexing of books, and collections of books, periodicals, music, recordings, films and other material with a reference section and suggestions for further reading; 3rd rev. ed. London, Ernest Benn; New York, John de Graaf, 1969.

KNIGHT, G. NORMAN, *ed.*
Training in indexing: a course of the Society of Indexers. Cambridge, Mass., M.I.T. Press, 1969.
viii, 219 p., tables, bibliog.

An UNUSUAL method of making a book index
The Indexer, vol.6, no.3, Spring 1969, p.118–22.
Preparation of typewritten index strips and method of sorting and pasting up.

LESK, M. E.
Word-word associations in document retrieval systems.
American Documentation, vol.20, no.1, January 1969, p.27–38.
The SMART automatic document retrieval system, studies association procedures for automatic content analysis.

KUSNETSOV, V. V.
Ispol'zovanie prosvetnykh perforkart dlya perevoda poiskovykh predpisanii na yazyk patentnykh klassifikatsii.
Nauchno — Tekhnicheskaya — Informatsiya, Seriya 1, no.12, 1968, p.12–14.
Use of optical coincidence cards for conversion of retrieval descriptions into patent classification language.

YASTREBOVA, E. I.
Ekonomicheskaya effectivnost' podgotovki predmetnykh ukazatelei k RZh s pomoshchu ETsVM na baze UDK.
Nauchno—Tekhnicheskaya Informatsiya, Seriya 2, no.12, 1968, p.16–19.
Economics of computerized compilation of UDC-based indexes to abstract journals.

DRUK, T. M.
Ispolzovanie UDK v rejime koordinatnovo indeksirovaniya.
Nauchno—Technicheskaya Informatsiya, Seriya 2, no.11, 1968, p.22–6.
Application of UDC for co-ordinate indexing.

HURWITZ, FRANCES I.
A study of indexer consistency.
American Documentation, vol.20, no.1, January 1969, p.92–4.
Comparison of indexing terms assigned by two different indexers to the same documents, using a co-ordinate indexing system.

JAHODA, G., *and* STURSA, MARY LOU
Tests of indexes; a comparison of keyword from title indexes with and without added keywords and a single access point per document alphabetic subject index, by G. Jahoda and Mary Lou Stursa, work by Mary Culnan, G. Jahoda, John Latimer and Mary Lou Stursa. Tallahassee, Fla., Florida State University School of Library Science, January, 1969.
iv, 4 p.

KOCHEN, MANFRED, *and* TAGLIACOZZO, RENATA
A study of cross-referencing. Communication 227. Ann Arbor, Mich., Michigan University, Mental Health Research Institute, March 1968.
3 p. (PB 179 752.)
One microfiche.

ALTMANN, BERTHOLD, *and* RIESSLER, WALTER A.
Theory, testing and mechanization of the ABC retrieval system.
American Documentation, vol.20, no.1, January 1969, p.6–15.
Indexing of a test collection of documents on solid state physics, by highly controlled ABC descriptors.

TOWNLEY, HELEN M.
Computers and indexes.
The Indexer, vol.6, no.3, Spring 1969, p.102–7.
KWIC and KWOC indexing: permuted indexing SLIC and CELT: articulated indexes and auto-indexing.

SALTON, GERARD
A comparison between manual and automatic indexing methods.
American Documentation, vol.20, no.1, January 1969, p.61–71.
Evaluation results for a comparison between MEDLARS and the experimental SMART system.

GARRICK, A. J.
A tape library index system for language laboratories.
Australian Library Journal, vol.18, no.1, February 1969, p.19–24.
System used at the Institute of Languages at the University of New South Wales.

HASHIMOTO, MASAYUKI
JAKIS—Japanese keyword indexing simulator system.
NEC Research and Development, no.12, October 1968, p.1–7.

PUSHKARSKAYA, R. E.
Logika i yazyk deskriptornoi sistemy avtomaticheskogo sostavleniya predmetnogo ukazatelya.
Nauchno—Tekhnicheskaya Informatsiya, Seriya 2, no.12, 1968, p.12–15.
Logic and language of a descriptor system for automatic subject index compilation.

BÁTORI, ISTVÁN
Automatische Textanalyse fur die maschinelle Informationsverarbeitung. 1969.
13 p., diagrs., bibliog.
Paper on FID/OM Meeting, 5th-8th February 1969, Frankfurt-am-Main.

MIKLÓSNÉ, DOMOKOS
A synoptic kartotékrendszer.
Tudományos és Muszaki Tájekostatás, vol.16, no.3, March 1969, p.186–98.
The SYNOPTIC filing system using manual punched-cards.

GROSCH, AUDREY N.
Thesaurus construction. A small collection of non-scientific reports.
Special Libraries, vol.60, no.2, February 1969, p.87–92.

*AMERICAN SOCIETY OF METALS
Thesaurus of metallurgical terms prepared by Metals Information Staff . . . in co-operation with fifty-two subject area specialists. Metals Park, Ohio, the Society, 1968.
244 p.

SCHIRMER, BRIGITTE
Erfahrungen bei der Entwicklung eines maschinellen Übersetzungssystems (Englisch-Deutsch).
IBM Nachrichten, vol.19, no.194, April 1969, p.600–5.
Experiences gained from the development of an automatic translation system (English-German). Description of the system; problems and objects.

Information Processing and Systems

BRANNON, PAM BARNEY, *and others*
Automated literature alerting system, by Pam Barney Brannon, Donald F. Burnham, Richard M. James and Lee Ann Bertram.
American Documentation, vol.20, no.1, January 1969, p.16–20.
System developed at Eli Lilly and Company and implemented as a successor to the *Chemical Titles* tape program.

TĂNĂSESCU, LEONIDA
Aplicarea la institutul central de documentare tehnică a sistemului Filmorex . . .
Probleme de Informare şi Documentare, vol.3, no.1, January 1969, p.38–57.
The Filmorex system applied for mechanized information storage and retrieval at the Romanian Central Institute for Technical Documentation.

LESK, M. E., *and* SALTON, G.
Relevance assessments and retrieval system evaluation.
Information Storage and Retrieval, vol.4, no.4, December 1968, p.343–59.
Evaluation study on a collection of 1,200 documents showed that differences in relevance assessments do not produce significant variations in average recall and precision data, which may thus be used as effectiveness indicators.

SWETS, JOHN A.
Effectiveness of information retrieval methods.
American Documentation, vol.20, no.1, January 1969, p.72–89.
Analysis of results of about fifty different retrieval methods applied in three experimental retrieval systems.

GOFFMAN, WILLIAM
An indirect method of information retrieval.
Information Storage and Retrieval, vol.4, no.4, December 1968, p.361–73.
Tests of an indirect method of information retrieval show better result than a direct matching procedure.

URR, HANS G.
DOKAUS—ein Organisationskonzept fur Dokumentations— und Auskunftsysteme

mit elektronischen Dataverarbeitungsanlagen.
IBM Nachrichten, vol.19, no.194, April 1969, p.586–93.
DOKAUS—a scheme for documentation and information systems with EDP.

MEYER, ERNST
Das System der IDC fur die Chemie-Dokumentation.
[1969.]
15 p., diagr.
Paper at FID/OM Meeting, 5th-8th February 1969, Frankfurt-am-Main.

NEW system for rapid identification of drugs.
Microdoc, vol.7, no.4, 1968, p.109, 111.
A retrieval system for a library of microfilmed spectra.

CHAMIS, ALICE YANOSKO
The design of information systems; the use of systems analysis.
Special Libraries, vol.60, no.1, January 1969, p.21–31.

WILDE, DANIEL U.
Iterative strategy design.
American Documentation, vol.20, no.1, January 1969, p.90–1.
A retrieval procedure and a strategy design philosophy permitting the strategy designer to focus on final results.

WARHEIT, I. A.
Report to committee FID/OM. [1969.]
Paper to FID/OM Meeting, 5th-8th February 1969, Frankfurt on Main.
Report on computerized information retrieval systems in the US, 1968.

DALE, HESTER L.
Breaking the information network barrier.
Special Libraries, vol.60, no.1, January 1969, p.17–20.
A computer program to aid the user to match his needs with data available.

GARDINER, G. L.
The empirical study of reference.
College and Research Libraries, vol.30, no.2, March 1969, p.130–55.
Four empirical studies of reference, the notions on which they are based, and a new framework for such studies.

Communication and Knowledge

CAWKELL, A. E.
Dissemination of scientific information.
Nature, vol.222, no.5189, 12 April 1969, p.202.
Reply to letter by Gordon Hyde, 'Scientists informed,' *Nature*, vol.220, no.5171, December 1968, p.1056.

VINCE, V.
A tájékoztatásugy—nyugat—európai szemmel.
Tudományos és Muszaki Tájékoztatás, vol.16, no.2, February, 1969, p.83–7.
The problems of information—as seen in Western Europe.

Professional Activity

STEELE, CARL L.
Library technicians—the big controversy.
Special Libraries, vol.60, no.1, January 1969, p.45–9.

DOHERTY, TERESA J., *and others*
The subprofessional or technical assistant; a statement of definition, by Teresa J. Doherty, Mary Leone Huber, James J. Kortendick and Dorothy F. Deininger.
Special Libraries, vol.30, no.3, March 1969, p.179–84.
Report by the Interdivisional Ad Hoc Committee of the Library Education Division and the Library Administration Division of the American Library Association.

SCHILLER, ANITA R.
Academic librarians' salaries.
College and Research Libraries, vol.30, no.2, March 1969, p.101–11.
Results of a survey of current salaries in American academic libraries.

CRAČEA, PETRE
Indrumarea metodologică a organalor de informare şi documentare din institute şi intreprindere. . . .
Probleme de Informare şi Documentare, vol.3, no.1, January 1969, p.23–33.
Training and education in information and documentation for institutional and industrial organizations.

HERRLICH, KARL-HEINZ
Education of documentation specialists for mechanical documentation. 1969.
Paper to FID/OM Meeting, 5th-8th February 1969, Frankfurt-on-Main.

KAMMEL, KARL
Bibliothekarausbildung in Österreich.
Biblos, vol.18, no.1, 1969, p.6–9.
Library education in Austria.

HAMSHER, MARY JANE, *and* HARVEY, JOHN F.
Exemption tests in library education.
College and Research Libraries, vol.30, no.2, March 1969, p.161–9.
A study of exemption tests in the Graduate School of Library Science at Drexel Institute of Technology, 1962–65.

FIRST report of the General Board's Committee on Libraries
Cambridge University Reporter, vol.99, no.29,

28 March 1969, p.1190–316.
Includes directory of departmental and institutional libraries of Cambridge University, giving details of collections, organization and history.

*LIBRARY ASSOCIATION. Reference Special and Information Section. *South Eastern Group* Library resources in London and South East England; edited by Selwyn Eagle. London, the Association, 1969. (SBN 85365 100 0.) 380 p.

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TECHNICAL SWEDISH, DANISH, NORWEGIAN translated by J. T. Craddock, B COM, FIL, Ekard, Ray Park Avenue, Maidenhead, Berks. Maidenhead 24931.

RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineering. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

WILFRED E. GOODAY, ARSM, DIC, C.ENG, MIMM, FIL. Member of Translators' Guild, Romanian and French. 161 Rivermead Court, London SW6. RENown 1912.

MEDICAL, PHARMACEUTICAL, BIOLOGICAL translations from French, Romanian and Portuguese into English and from English into French and Romanian. Dr J. Jacobson, 94 Temple Fortune Lane, NW11. 01-455 1010.

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CHEMICAL and pharmaceutical translations from German and Russian into English by chemist with both technical and commercial experience in several branches of the pharmaceutical industry. Translations from English into Russian in collaboration with recent native graduate of Moscow University. Box No. 369 Aslib.

Appointments vacant

An Assistant is required for the FID Classification Department, in connexion with the Federation's UDC activities, which are to be largely mechanized through the use of an automatic punch-typewriter and an office printing machine. The work consists mainly of the preparation of Draft P-Notes and P-Notes, editing of 'Extensions and corrections to the UDC' and checking the manuscripts or proofs of UDC editions in various languages, together with correspondence in connexion with UDC and other classification problems. A good reading/writing knowledge of at least two or three of the major languages—English, French, German, Russian, Spanish—is essential, and a general documentation background desirable. Initial salary would be in the range of F16,000 per annum, depending on qualifications and age, with corresponding pension benefits and three weeks paid holiday each year.

Applicants should write as soon as possible to the FID, Hofweg 7, The Hague, Netherlands.

INDEXING AND CLASSIFICATION. The Brixton School of Building and the School of Librarianship, North-Western Polytechnic, with the support of CIRIA (Construction Industry Research and Information Association) and the Ministry of Public Building and Works, are developing a comprehensive thesaurus and classification of terms for use in the construction industry. The work (which is being carried out at the Brixton School of Building) is scheduled for completion by December 1970.

A number of Research Assistants are required as soon as possible to assist in this interesting and valuable work. Applicants are invited from librarians and/or information officers with some training in modern classification. Experience in the work of the construction industry would be an advantage, but it is not essential. Salary will be in the range £1,400–£1,600 according to experience and qualifications. Details from Mr K. Turner, Brixton School of Building, Ferndale Road, London SW4. Tel. 01-274 0944, ext. 32.

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C.I.R

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The Commission on Industrial Relations has been established with the object of improving industrial relations

To support the operational side of the Commission's work it is intended to set up a Research and Information Branch which will include a library. The library will be housed at the Commission's premises, but will be constituted as a branch of the main library of the Department of Employment and Productivity. Professional staff employed will, therefore, have career prospects in the public service.

Applications for the post of librarian in charge are invited from persons who are chartered librarians and have passed Part II (Final) or post-graduate professional examinations of the Library Association or hold a Diploma in Librarianship from a British University. Experience in a library dealing with social studies will be desirable but is not essential.

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Applications marked "Librarian" should be sent to the **Establishments and Finance Officer (AP), Commission on Industrial Relations, 22 Kingsway, W.C.2.** within fourteen days from the date of this advertisement.

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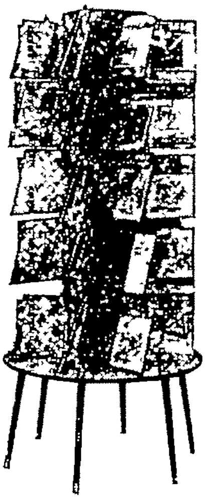

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 21 **July 1969** **Number 7**

ASLIB CALENDAR 1969

July

FRI.25.	Technical Translation Group. Evening meeting. The compilation of a dictionary. 3 Belgrave Square at 4 p.m.

September

TUE.9.	Engineering Group. Visit to British Hydromechanics Research Association, Cranfield. 2.30 p.m.
SUN.21 – WED.24.	43rd Annual Conference, University of Warwick, Coventry.

October

WED.22.	Evening Meeting at Aslib. The SCAN system.
TUE.28 – THU.30.	Aslib/Construction Industry Research and Information Association. Joint Conference. Leamington Spa.

1970

February

TUE.24.	Evening meeting at Aslib. Facsimile transmission. Speaker: J. J. Hall. 5 p.m. for 5.30 p.m.

April

THU.23 – SAT.25.	Joint Northern/Midlands Branches. Conference Derwentwater Hotel, Portinscale, Keswick.

Aslib and Developing Countries

As reported some months ago (*Aslib Proceedings*, January 1969, p. 2) the Commonwealth Foundation provided funds to enable Aslib to conduct a feasibility study for holding certain of its intensive training courses in West Africa. This study was undertaken in March by Professor W. L. Saunders, Director of the Postgraduate School of Librarianship and Information Science (University of Sheffield) and Chairman of the Aslib Education Committee.

This report shows that there is considerable scope for specially designed short courses in both Ghana and Nigeria, and his recommendations are now under consideration. However, there are some policy questions which will have to be settled. Thus to what extent should Aslib's effort in these countries, or other developing countries, be a continuing commitment or a pump-priming operation with the hope that suitable facilities will eventually be developed locally?

Aslib as an Organization of Influence

The Director, Mr Leslie Wilson, lectured to the students of the College of Librarianship Wales, at Aberystwyth, on Tuesday 27th May on the subject of Aslib as an organization of influence.

He was entertained by the College at a luncheon party which included Mr D. Jenkins, the Keeper of Printed Books of the National Library of Wales, and Dr H. D. Emanuel, Librarian of the University College of Wales, Aberystwyth.

Professional Appointments Register

As a necessary step towards the goal of a full-scale information staff consultancy service for member organizations, the Aslib Staff Register is being developed to provide a more positive service for employers seeking to fill vacancies in their library and information services.

As a result of this change of emphasis, from 1st July 1969 no fee will be charged to candidates accepted on to the Register but employers will be asked to pay an agency fee in the normal way whenever an appointment is made from candidates put forward by Aslib. Full details of this service are given in the Services leaflet distributed with this month's *Proceedings*.

Aslib Social Sciences Group

An exploratory meeting to discuss the formation of an Aslib Social Sciences Group was held on 16th June 1969, at Aslib, when fifty people, representing a broad cross-section of the Aslib membership, attended.

After discussion it was agreed that the areas of activity of the Group would fall into two main categories:

1. *The social sciences as a subject area.*
   Within this category fall the information needs and uses of social scientists; classification and indexing; bibliographical control; special types of material (numerical data, government publications, statistics, etc.); access to research in progress and the physical organization of materials.

2. *The social sciences as applied to the study of libraries and information transfer.* The sociology, psychology and economics of information transfer and use; sociological, psychological and economic techniques applicable to the study of information use and organization, and libraries and information units as administrative structures (the psychology and sociology of management).

These activities seem likely to be of interest to librarians and information officers in a variety of environments—academic, industrial, government, etc.—and any difference of approach should be stimulating rather than divisive.

The main subject disciplines of concern to the Group are sociology, psychology, economics and politics, though education and law, which have special problems, also fall within the general area of interest.

A Steering Committee under the chairmanship of Mr Maurice Line, of Bath University of Technology, was elected to examine the functions and purpose of the Group in more detail and to produce a tentative programme of activities.

The Dainton Report on National Libraries

One of the fundamental recommendations of the Report, published on 10th June 1969, is the establishment of a National Libraries Authority. This would co-ordinate the services and operation of the principal national library institutions and ensure the effectiveness of their future development. The new Authority would assume responsibility for certain functions relating to research, bibliographic activities, and translations which are currently carried out by OSTI and Aslib. The Aslib Council is now considering the Report.

Detailed reviews will appear in the September and December issues of the *Journal of Documentation.*

The Queen's Birthday Honours List

Members will be pleased to learn that the following people, who have been associated with Aslib, have been honoured in the Birthday Honours List:

G. Weston, CBE, until lately Associate Director General of the British Standards Institution, and Honorary Treasurer of Aslib from 1959 to 1963.

P. J. C. Perry, OBE, Director and Secretary of the British Association for Commercial and Industrial Education.

Miss M. L. P. Bingham, MBE, Editor of *British Book News.*

The Association of Law Librarians

Following discussions at a conference on Law Librarianship held at Harrogate in April 1969, the Association of Law Librarians has been formed. Its purpose is to bring law librarians together for discussion and the exchange of information. The Association intends to produce a quarterly journal or newsletter.

The first Annual General Meeting will be held towards the end of September. Further information can be obtained from the Hon. Secretary, Mr W. W. S. Breem, c/o The Library, Inner Temple, London EC4.

FID

The second Regional Congress on Documentation will take place in Rio de Janeiro, Brazil, 23rd–28th November 1969. It will be organized by the Brazilian

Institute of Bibliography and Documentation (IBBD) under the auspices of the National Council for Research. Further details can be obtained from IBBD, Avenida General Justo, 171, 4^0 Andar, Rio de Janeiro, Brazil.

International Chemical Information System

One of the first steps in world-wide co-operation in handling chemical information is the recent agreement between the American Chemical Society and the Chemical Society, whereby the latter has acquired the exclusive rights to distribute the publications and computer services of the Chemical Abstracts Service (CAS) in the UK. In this context the Chemical Society is acting for the UK Consortium on Chemical Information, formed in September 1968, which also includes The Royal Society, The Royal Institute of Chemistry, The Society of Chemical Industry, The Faraday Society, The Society for Analytical Chemistry, The Biochemical Society, The Institution of Chemical Engineers, The Chemical Industries Association and Aslib.

For its part the Chemical Society will promote the computer-based services of CAS in the UK and develop procedures for processing the British literature (periodicals and patents) for input to CAS. Ultimately the abstracts and indexing details will be supplied directly to CAS in machine-readable form. These developments are based on considerable experience and evaluation carried out at the Chemical Society Research Unit in Information Dissemination and Retrieval at the University of Nottingham, established in 1966 with financial support from OSTI. This Unit is now experienced enough to form the nucleus of a full-operational centre for chemical information.

It is generally accepted that the ACS-CS agreement is likely to serve as a model for ACS agreements with chemical organizations in other countries.

PANSDOC

Now that more than ten years have passed since the foundation (mid-1957) of the Pakistan National Scientific and Technical Documentation Centre in Karachi, the following lists are a useful record of bibliographical activity:

List of Pansdoc bibliographies, 1957–1967
Pansdoc translations, 1957–1967. *Index*.

These lists which are a reflection of the special interests and needs of a developing country can be consulted at Aslib.

Selective Dissemination of Microfiche (SDM)

The Clearinghouse for Federal Scientific and Technical Information (Springfield, Virginia 22151) started a new service in April which will allow its customers to order reports and translations sponsored by over a hundred Federal and other agencies on the basis of several hundred subject categories. The distribution of microfiche will be made twice each month at a price substantially lower than the standard Clearinghouse price of 65 cents per title.

BRIEF REVIEWS

AMERICAN LIBRARY ASSOCIATION. The use of the Library of Congress Classification. Proceedings of the Institute held in New York City, 7th–9th July

1966. Ed. by R. H. Schimmelpfeng and C. D. Cook. Chicago, ALA, December 1968. 260 p. $6.50.

At this conference practising cataloguers and Library of Congress staff covered the nature and use of the LC Classification by demonstrating the techniques on the basis of actual book titles and the schedules. Special problems in the classes for literature, science and technology, the social sciences were discussed. Guidelines for changing from other classifications to LC were given as well as the costs and personnel that would be involved, both in academic and public libraries.

BAKEWELL, K. G. B. Industrial libraries throughout the world. Oxford, Pergamon Press, 1969. 192 p. 56*s*. (SBN 08 103364 9).

This survey aims to explain the value of library services to industry, particularly to raise productivity. It selectively includes services provided by individual firms, government agencies and other organizations in the major countries of the world. Thus there are individual chapters on a few international organizations, Great Britain, the rest of Europe, the USSR, the United States and Canada, Latin America, Africa and the Middle East, Asia and Australasia. Inevitably the coverage is uneven (much less on China than on Ceylon) and no attempt is made to arrive at any general comparisons or conclusions. In a final chapter the management of the industrial library is sketched. A comprehensive bibliography as well as a useful index are provided.

THE BRITISH MUSEUM (NATURAL HISTORY). List of publications in the . . . Library. London, 1968. 1168 p. £2.

This list, consisting of approximately 12,500 entries, contains the titles of serial publications received up to December 1967 in all the libraries of the British Museum (Natural History). As well as periodicals, reports of expeditions and other works commonly known by their titles and issued in a number of parts over a period of time are included.

The entries are arranged alphabetically by title and there are references to and from preceding and continuing titles. Each title is followed by the appropriate abbreviation, details of holdings and the relevant shelfmark.

A most valuable guide to this unique collection.

GILJAREVSKIJ, R. S. International distribution of catalogue cards: present situation and future prospects. Paris, Unesco, 1969. 84 p. 9*s*.

At its third session held in Moscow in April 1965, the International Advisory Committee on Bibliography, Documentation and Terminology recommended that an international study should be made of existing projects. This resulting volume describes centralized services in twenty-one countries for printed catalogue cards. It is based on replies received from seventy-five agencies to a questionnaire. There are chapters on the usefulness of these cards, the international standardization of cataloguing rules and cataloguing at source. One appendix provides some thirty sample catalogue cards.

INTERNATIONAL LIBRARY REVIEW, v. 1, no. 1. January 1969. New York and London, Academic Press, 1969. Quarterly. $24.

This addition to library literature is a periodical which 'deals with all aspects of progress and research in international and comparative librarianship, documentation and information retrieval, in national, public, university, and school libraries'. The Editor, Dr G. Chandler, the City Librarian of Liverpool, starts the issue off with an 'Editorial comment on publications and documents received' under the broad headings of international organizations, national library associations, subject studies and individual publishers. The articles that follow are arranged in three groups: international, area specialists, and subject specialists. They include a paper by H. C. Campbell on international diffusion of documentation by communication satellites, three contributions to the IFLA Libraries in Hospitals sub-section, a long extract from a Unesco working document on 'The present state of library services in Asia' and the statutes of, and two papers on, the newly created International Association of Metropolitan City Libraries (INTAMEL), among others.

PROJECT INTREX. Semi-annual activity report, September 1968 to March 1969. Massachusetts Institute of Technology, 1969. 40 p. (PR–7).

The INformation TRansfer EXperiments at MIT have reached a point, after three years, at which the augmented catalogue system with its IBM 2741 console access is now being tried out with a sample population of individual users. The selection of current periodical articles provided 8,200 documents, which were indexed and stored as microfiche. The complete text-access system allows the selected page of the document chosen by 'computer dialogue' to be displayed by remote control and a microfilm facsimile of the scanned page to be provided.

The Project is also addressing itself seriously to two current developments of importance:

(*a*) the trend towards the ultra-microfiche libraries using reduction ratios of between forty and 150;
(*b*) the growing national interest in information transfer networks.

RESTAURATOR: international journal for the preservation of library and archival material, v. 1, no. 1. Copenhagen, Restaurator, 1969. (125 Kroner per volume of three issues.)

This is the first international periodical covering the fields of conservation and restoration and thus brings together articles that would otherwise be widely scattered in the literature. The Editorial Board consists of members from thirteen countries. Contributions are accepted in English, French or German and abstracts in English and Russian are appended to the longer articles. The current issue includes articles on the de-acidification of documents, the cleaning of paper, and the restoration of parchment in manuscripts.

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Mr W. McKenzie	Canada
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DISCOVERING THE USER AND HIS INFORMATION NEEDS

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INTRODUCTION

AS librarians and information officers become increasingly aware that their main function should be to provide an efficient service for their users, more attention is being paid to discovering what type of service is required. Any service must be based on the information needs of the users, and as a means of determining these the organized use study has achieved a position of prominence in recent years.

Although more and more librarians and others now appreciate the value of use surveys and are busy carrying out local, regional and national investigations, many of them are not fully aware of the problems and techniques associated with such studies. As Maurice Line in his book on library surveys[1] states: 'Too often the result of a survey is an indigestible mass of badly interpreted data collected from a poorly chosen, inadequate sample by unreliable and invalid methods according to an ill-conceived design'.

In this talk I am going to discuss the different methods of carrying out use studies and point out some of the more obvious pitfalls to avoid. I shall not be able in the time available to discuss all aspects of use surveys, but I hope I shall be able to give you a feeling for the subject. For those who wish to follow the matter further, there are a number of well-written books on the subject. I would certainly suggest, for instance, that you should consult Line's book[1] which I mentioned earlier.

Having decided to undertake a use survey, the first step is to plan the whole investigation. Time at this juncture is well spent, since decisions taken at the planning stage subsequently affect all that follows.

The first question to ask yourself is what it is that you want to find out. The answer to this question will help you decide on the scale of the investigation, the method to be used, the timing of the study, and the type of questions to be asked or the type of information to be recorded.

Care should be taken not to ask questions or record information which you only *think* might be of use, or which produce results which merely lead to comments such as 'Very interesting, but so what?' Such questions only waste your own time and that of the respondent. During NLL investigations we have tended to apply what Dr Urquhart calls the 'so what' test to all questions before incorporating them into the surveys which we have undertaken. The sort of questions I have in mind are the following: 'Do you consider that existing books are adequate for enabling you to fulfil your present function?' and 'Would you be helped if there were more of the following types of literature published: data sheets, design handbooks, review articles, etc?' In both cases it is difficult to see what sort of action could possibly be taken if the reply to these questions was either 'Yes' or 'No'.

Deciding what questions to ask and how to phrase them will be made much easier if at the outset of any investigation a serious attempt is made to find out what previous workers, if any, have done in the same field. Some bibliographies of use studies have, in fact, been published[2,3] and will help you to track down previous work.

Examining the work of previous investigators will not only suggest how your own survey might be planned or improved, but it will also enable you to formulate questions which will allow you to compare directly your own results with those of other surveys. Despite this rather obvious statement, it is surprising how frequently it is impossible to carry out such a comparison.

SAMPLING

There are very few occasions when it will be possible to survey the whole of a population, and for this reason a *sample* of users, documents or records will have to be selected. It is most important if the results are to be valid that this sample should be as representative as possible of the whole population. The most effective method of picking a sample is to make a completely random selection, since only if every member of the given population has an equal chance of selection can the sample be an unbiased representation of that population. The first requirement when making this random selection is to have a complete and accurate list or collection of the people, documents or records to be sampled. The records used for drawing a sample are called a sampling frame, and examples of such are lists of members of learned societies, a list of employees in a particular organization, a university academic register, directories of firms, a file of loan records for a given period, a list of citations, and so on.

Once the sampling frame has been established, a random selection has to be made from it. This can be achieved by numbering each item or individual in the list and picking the sample by using a table of random numbers. Such tables, usually generated by computers, are to be found in the published literature. Alternatively, if the list is already in random order or in an order which has no bearing on the subject of the investigation, for example, an alphabetical list of names, a satisfactory sample can be selected by picking every *n*th item in the list.

Random samples of course are random, and it is just conceivable for instance that if a sample was drawn from a population of physicists and chemists the sample would consist entirely of chemists. To eliminate this possibility and to be sure of getting a representative sample it is possible to stratify the sample, that is, one could split the population to be surveyed into chemists and physicists, and then pick the *n*th person from each sub-sample.

A sample, naturally, is only an approximately accurate representation of the population, and the size of the sample will depend on the degree of accuracy required. For example, if only five hundred from a population of twenty thousand were examined the figures resulting would be accurate to within only plus or minus six per cent. Tables are available to help you work out similar figures for other sizes of population and sample.

TIMING OF THE SURVEY

An important decision to take during the planning stage of the survey is the timing of the investigation. Many activities are cyclical in some way or other, and to be sure of obtaining a representative picture of the activity you are measuring it may be necessary to pay a lot of attention to the timing of the survey. To get an overall picture of the use of a university library, for instance, it would be no use carrying out a survey in the last two weeks in May, since at this time undergraduates are all revising for examinations, and are using the library mainly for reading up their own notes. Postgraduate students are deterred from using the library because it is full of undergraduates, and some of them, for example geologists, will be away from the university on field work. It might be more appropriate in such a case to carry out a number of small surveys at different times of the year.

Another example of a timing problem can be drawn from the NLL. Periodically we survey the use being made of the NLL, that is, who uses the Library for what type of literature and so on. When doing a survey of this kind we deliberately avoid holiday periods and particularly the months of July and August because, apart from this being our slackest time, we would get a disproportionately low use of the stock by university libraries.

Another point to bear in mind and also concerned with timing is that if the survey is going on for a long time nothing should be done that will alter the situation in mid-stream, since results obtained before this action will not be comparable and cannot be considered together with those obtained afterwards. For example, if one was measuring the use of the library, then one would not launch a current awareness service in the middle of the investigation, since this would undoubtedly have an effect on the scale and method of use of the library.

SURVEY METHODS

Having discussed a few points to consider when planning a survey I now want to mention briefly some of the techniques which are available for actually carrying out the investigation.

All the techniques have certain advantages and drawbacks compared with the others, and which is used will depend on the nature of the investigation.

There are five basic methods of investigating user needs:

1 Questionnaires
2 Interviews
3 The diary method
4 Observation
5 Analysis of existing data

Questionnaires

The most frequently used technique, and the one about which I wish to say most, is that employing the questionnaire. Questionnaires, and particularly mail questionnaires, have the advantage that they can be used to survey a large geographically scattered population. They have the following disadvantages, however:

1 The response rate is likely to be low.

2 One has no way of knowing the respondent's state of mind when he is answering the questions, e.g. he might be feeling flippant at the time.

3 One has no way of knowing whether the respondent understands the questions.

4 It is impossible to probe an incomplete response.

Having made these general observations about questionnaires, let me now be more specific. To begin with, a few points about the questions themselves, and first of all a warning not to make your questionnaire too long. It is unreasonable to expect anyone to spend more than half an hour completing it, and it is better that the respondent should answer a few questions properly rather than answer many inadequately.

Be sure also that the questions asked require information that is sensible. An example of a bad question might be 'About what per cent of useful information on your subject do you get from abstracts, journals, books, etc.?' Such questions cannot be answered accurately, if at all, and merely serve to upset respondents, who then take little care over replying to the rest of the questionnaire, or merely consign the whole thing to the waste-paper basket.

As well as being sensible, the questions should be both clear and specific. It is no use asking 'How many abstracting journals do you scan regularly?' because 'regularly' is open to a variety of interpretations. Does it mean every issue, every other issue, whenever the respondent is in the library, or what? Similarly, if you ask the question 'How much personal money did you spend on buying literature last year?' the respondent would not know the type of literature you had in mind or whether you meant the last calendar year or within the last twelve months.

Be careful too that the questions are comprehensible. Care should be taken in the use of words which, although part of your own everyday vocabulary, may be unknown to some respondents. For example, if you ask someone whether he uses abstracting journals he might not know what an abstracting journal is. He might erroneously think that he does, in which case his answer is misleading, or he might say 'no' even though he does use this type of literature. If you have to use such words, then explain what they mean in the questionnaire itself.

Another general point about questions is that they should be objective and not be phrased to solicit a particular or restricted response. An example of such a leading question is 'Are you one of the few enlightened scientists who makes use of abstracting literature?' Who would dare to say no? This is obviously an exaggerated case of what I mean, but I hope it makes the point.

Having formulated the questions, there are several ways in which one can ask for an answer. First of all, there is what we call the open question, which allows for a completely free answer. The answers to these can be very difficult to analyse, but the questions are less leading than the more common type where possible answers are given alongside the question and respondents are invited to tick or otherwise mark the appropriate answer. These possible answers might merely be yes and no or there may be ten or more alternatives to choose from. Where answer categories are given care should be taken to make them exclusive.

Again, where answers are categorized it is rarely possible to include categories covering all possible replies and a final category labelled 'Other' should always be included. Sometimes this may turn out to be such a large category that a separate analysis of the replies may be necessary when the answers are being studied.

Another way in which answers can be solicited is to use the ranking method. Rather than ask a question which demands a yes/no answer or a box to be ticked, it is sometimes appropriate to ask respondents to rank a number of alternatives. For example, they could be asked to rank in order of importance a number of given sources of information rather than indicate which they find most useful. The results are often much more meaningful.

A useful technique to employ when carrying out questionnaire surveys is to include virtually the same question in a different form. This enables you to overcome ambiguous phrasing and misinterpretation of the questions. It is also useful if possible to include at least one question the answers to which can be checked against other records or data. This enables you to test the accuracy of the replies or to estimate the representativeness of the sample you have chosen. For example, if from your library loan records you know the average number of items borrowed per year per member of staff to be n and discover from a survey that the staff claim to borrow an average of $2n$, then either the sample has been poorly selected or the respondents are over-anxious to impress you. Either way the discrepancy casts doubts on the validity of the rest of the survey.

Finally, at the end of the questionnaire it is useful to include an open invitation of the type 'Please feel free to add further comments on other points on which you have strong views'. Many people have pet aversions or ideas which they like to air, and if they are allowed to do so are more likely to be co-operative whilst completing the rest of the questionnaire. Not that the replies are usually of much use, however, since the points discussed are so diverse that they are often unsuitable for analysis. The respondents, however, are not to know this.

Having decided on the questions to ask and the way in which they should be answered, the next step is to decide on the physical layout of the questionnaire. The over-riding consideration here is to make it easy to follow. So many questionnaires are ignored by the recipients because they look complicated. It is a good idea if possible to make use of answer boxes and to place all these down either the right-hand or left-hand margin of the forms. Clear instructions should be given to respondents as to what they should do, such as 'Place a tick in the appropriate box' or 'If you have answered "no" to this question, please go direct to question X'.

From the point of view of analysing the replies when the questionnaires are returned it is useful if the questions are accompanied by coding details. These will mean nothing to the respondent, and are intended to facilitate the transfer of data from the questionnaires to, for example, punched cards. It has been argued that such pre-coded questionnaires give the impression of being too complicated and that this probably affects the response rate. I have no evidence to support this, however, since the only questionnaire which the NLL sent out uncoded, namely that to mechanical engineers[4], had the poorest response rate of all.

Regarding the method of distribution of questionnaires it is most common to send the forms out by post. An alternative method is to distribute the questionnaires together with other documents. For example, a recently conducted Aslib survey into the use of metallurgical literature[5] was carried out in part by inserting the questionnaires in the current issues of metallurgical journals. If the survey is a local one it is possible to distribute forms by hand or allow people to pick them up as, for instance, they leave a library. The latter technique, however, is not recommended as there is no control over the sample. However it is decided to distribute the questionnaires it is useful to attach a letter explaining the aims and objects of the study, and in the case of non-local surveys a stamped addressed envelope should be included. The letter is particularly useful, since if it is made clear that by filling in the questionnaire respondents are likely to benefit in some way, then they are much more likely to co-operate. Generally speaking, at the NLL we have been fairly successful in obtaining the co-operation of the chosen sample, and the response rate has varied from fifty to eighty per cent. We have never attempted to increase the response rate by keeping a record of those who have replied and following up the questionnaire with reminder notices at a later date, but the response rate could be improved by this method. Concerning the speed of reply, this has been fairly similar for every survey we have conducted. About fifty per cent of the eventual replies have been received after five days, but this could increase to ten days if second-class post is used. They have usually been reduced to a trickle after two weeks, and after three weeks virtually nothing is returned.

Having spent a considerable amount of time on questionnaires, I now want to pass on to other techniques available for carrying out surveys. Much of what I have already said, particularly about the style and phrasing of questions, also applies to these other techniques, and I will say no more about them.

Interviews

The main *disadvantage* of interview studies is that *pro rata* they are generally more costly to undertake than a questionnaire survey because they call for skilled interviewers. They are also less useful for surveying a large geographically scattered population. They have the *advantage* that the interviewer by making repeated calls on the interviewee can get a high response rate and can also gauge the respondent's mood, a thing which cannot be done in the case of questionnaires. It is also possible in an interview to overcome the problem of misinterpretation of questions, and the interviewer can also probe in cases of incomplete or ambiguous answers.

Interviews can take one of two forms. They may be structured, i.e. previously formulated questions may be asked in a particular order, or they can be unstructured, i.e. the answer to one question may be used as the basis for the next. Both methods have their merits, although the structured interview is often favoured on the grounds that everybody is asked the same questions, and answers can be correlated much more easily. Structured interviews also have the advantage that less skilled and trained interviewers are necessary.

A useful technique is to combine the interview and questionnaire methods. The questionnaire study should be undertaken first and interviews of a small sub-sample should then be carried out. The interviews will enable a check to be made on the validity of the answers given in the questionnaires. The NLL employed this technique in a survey of the use of technical information in local authorities[6], and the interviews showed quite clearly that the replies to the questionnaire tended to over-emphasize the use made of technical information. To obtain meaningful results we applied a correction factor to the figures obtained from the questionnaire survey, this correction factor being calculated on the basis of the interview study.

Diaries

In this method of carrying out a use study the population being investigated might, for instance, be asked to record their use of the various information channels open to them. The record keeping and subsequent analysis can be facilitated by making use of forms. Such studies have the disadvantage that busy respondents will not keep a running record of each new information-gathering act, but will try to catch up periodically by recalling their activities at a later date when they may have forgotten some detail or other.

Some years ago Aslib employed a variation of the diary technique when they invited a number of scientists and technologists to record their information-gathering processes on a tape recorder over a period of several months. On the whole I think it was decided that this method of carrying out a user study was unsatisfactory. One major drawback was that the analysis took a very long time and another was that the sample used was necessarily very small.

Observation

The observation technique has much to commend it if it is only desired to learn how much time the user spends with each information source. It has the advantage that, unlike the scientist himself, the observer does not fail to record what he is doing just when it becomes most engrossing. Similarly, unlike the scientist, the observer has no desire to embellish the record by over-emphasizing the use of some particular source of information. The technique is limited in that the observer can only record data when the subject is actually under observation, for example, in either a laboratory or a library. Information gained in other places, for example, in the staff room, corridors, at conferences or at home, cannot be recorded. If you wish to know something other than the amount of time spent with each information source, such as the purposes of information seeking, attitudes towards information sources, or the value of information, then the observation method is not sufficient on its own and must be combined with another technique that permits an introspective response.

A variation of the observation technique allows for random observation by the scientist himself. This technique was used quite effectively in a recent

American investigation[7] in which 30,000 random observations were made by 300 chemists and 400 physicists on themselves. During the fourteen-day study these scientists carried random alarm devices. The alarms rang at random intervals, and on average 3.5 times per day. Whenever this occurred whilst the scientist was reading a scientific journal he recorded his reading act on a form. The details recorded included the language, age, and title of the paper, where he was reading it, and whether the journal was his own personal property. A pattern of journal reading habits was thus built up.

Existing records

The final method of undertaking a use study which I wish to consider is that of examining existing records of use. There are probably others, but three such records come readily to mind: library circulation records, details of reference inquiries, and citations.

The examination of library circulation records enables one to determine the use of a library and thus to build up a pattern of reading habits. Many of the NLL use studies have used this technique[8, 9].

In the case of reference inquiries one can record the type of questions asked, what tools are used in answering the questions, what answers are given, and what questions could not be answered. An analysis of these records gives one an insight into what sort of information is required by clients of a library, and helps to formulate policy regarding the library service. The Shell Research Laboratory undertook a survey of this kind some years ago[10]. This study involved the analysis of 696 questions, each of which took at least half an hour to answer, and which had been collected over a period of three years.

The examination of citations in the hope that they will indicate what type of literature is used by different types of scientist is a technique which has been used for many years. It has been argued, however, that frequency of citation does not reflect frequency of use, and for this reason this method of studying user habits has been largely discredited.

PILOT STUDIES

Whatever method is used for carrying out a use study it is always essential that some sort of pilot investigation should take place before the main survey itself is launched. This is particularly true in the case of questionnaire studies. At the NLL we have always found that such pilot surveys have proved their worth and as a result of carrying them out we have modified many of the original questions largely on the grounds that the respondents did not understand them. In one case the pilot survey prevented us undertaking the main survey altogether in so far as it demonstrated that the information we were seeking was not available from the people who received the questionnaires.

ANALYSIS OF DATA

Whatever method is used for obtaining data regarding the use of literature or other information sources by scientists and technologists, one is ultimately faced with the problem of analysing and collating the data which has been collected. In the case of a small survey it may be possible to correlate the results manually, but in most cases it will be necessary to transfer the data on to edge-notched cards or into machine-readable form. At the NLL we have tended to use punched cards for most of our surveys. In this case direct transfer of the information on to the cards is relatively easy if the questionnaires, for example, are pre-coded. If questionnaires are not coded the transfer of data can be facilitated by using coded overlays. Where loan records are being analysed it might be necessary to go through the intermediate step of manually preparing a coding sheet for each request before finally transferring the data on to punched cards. The use of a mechanical sorter fitted with a counter enables the cards to be sorted and the data to be correlated. The use of punched cards is a satisfactory method for analysing any survey where up to about 10,000 questionnaires or other records are involved. Should more than 10,000 cards have to be analysed it is really a job for a computer, and in the case of one or two NLL surveys where there have been more than this number use has been made of a computer service bureau. This leads me to my final point that if work is sent out to a service bureau it is essential to state as precisely as possible what tabulations and cross checks are required.

In this paper I have had to deal with a topic which has been the subject of many books, and have therefore had time to deal only briefly with the many aspects of surveys. Being unaware of the previous knowledge of my audience on surveys and survey techniques, I may very well have pitched my comments at too low a level. I hope, however, that the majority will have found it useful, and that as a result you will be encouraged to undertake surveys of your own, and in a manner which is unlikely to cause you either embarrassment or frustration.

REFERENCES

1 LINE, M. B. *Library surveys.* London, Clive Bingley, 1967.

2 DAVIS, R. A., *and* BAILEY, C. A. *Bibliography of use studies.* Philadelphia, Drexel Institute of Technology, Graduate School of Library Science, 1964.

3 DE WEESE, L. CARROLL. A bibliography of library use studies. *In* JAIN, A. K., *and* DE WEESE, L. C. *A statistical study of book use.* Lafayette, Ind., Purdue University, 1967 (PB 176525).

4 WOOD, D. N., *and* HAMILTON, D. R. L. *The information requirements of mechanical engineers.* London, The Library Association, 1967.

5 VICKERY, B., SLATER, M., PRESANIS, A., *and* FISHER, P. *Metals information in Britain.* (Report submitted by Aslib to OSTI in January 1969 and available *only* from the NLL as BRDR 1015/69.)

6 WOOD, D. N. Finding technical facts and figures, *Municipal and Public Services Journal,* 22nd July 1966, p. 2471 and 2473.

7 MARTIN, M. W. The use of random alarm devices in studying scientists' reading behavior, *Transactions of the Institute of Radio Engineers Professional Group on Engineering Management,* EM-9, 2, 1962, p. 66–71.

8 WOOD, DAVID, N., *and* BOWER, CATHRYN A. Survey of medical literature borrowed from the National Lending Library for Science and Technology, *Bulletin of the Medical Library Association,* 57, 1, 1969, p. 47–63.

9 WOOD, D. N., *and* BOWER, C. A. The NLL's collection of social science periodicals, *Library Association Record,* 71, 2, 1969, p. 39–40.

10 MOTE, L. J. B., *and* ANGEL, N. L. Survey of technical information inquiry records at Thornton Research Centre, 'Shell' Research Limited, *Journal of Documentation,* 18, 1, 1962, p. 6–19.

READER INSTRUCTION IN MODERN UNIVERSITIES

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NEARLY fourteen years ago my colleague at the University of Glasgow, R. O. MacKenna, wrote in the *Journal of Documentation*[1] what is virtually the paper I am going to read today (although perhaps I am in a position to translate into practice things which he could only, at that time, discuss in a theoretical way). He called reader instruction 'a university library problem'; it is still a problem, but there are signs that it is one which is on the way to being solved, or at least one which we now know how to solve if we only had the financial resources to implement the solution.

The Royal Society Conference on Scientific Information in 1948—that seminal collection of papers which has had so much influence on our professional thinking—brought to prominence the fact that the scientist, after he had supposedly finished his training and achieved independent status as a research worker, was still at a loss when confronted with 'the literature' of his subject; in other words, he had never learned to use a library in the most efficient way. (This statement, of course, begs the question of whether a library—a collection of written documents—is, in fact, the best way of transmitting knowledge in the circumstances of our modern world; but that is another paper!)

The Library Association reacted promptly to this allegation; while it admitted the facts, it also proposed a set of solutions[2] which form the basis of much of the work currently being done in this country, not only for the scientist but for the humanities student as well. The fact that it took fifteen years for all but one or two of our libraries to start to implement the recommendations of the Library Association Working Party is, I think, as much an indictment of the conservative attitude of the academic profession (now, thank goodness, rapidly dying out) as it is a result of the financial strait-jacket formerly imposed on libraries by a government and administrators who were perhaps less library-minded than they are today.

Basically the Library Association solution was in three parts:

1 an introduction to the library at the beginning of the student's university career—a lecture, with a printed guide to reinforce and amplify the points made, followed by a guided tour of the library with a senior member of the staff pointing out items of interest;

2 as soon as the student begins his specialized studies (this may be in his second or third year, or even later in some cases) he should be given an introduction to basic bibliography—the techniques and reference tools common to all subjects as well as those which refer specifically to his major field of study;

3 finally, as soon as the research student begins his post-graduate work he should be given a more extended course in subject bibliography, which would reinforce and build upon his previous experience; this course should, the report states, be given partly by the library staff and partly by academic tutors.

This pattern of instruction is, I think, a fairly obvious one in principle, particularly if applied to students of the sciences, who seem to stand in greatest need of bibliographical awareness (this is probably a false assumption: although the Arts man tends to be more aware, because of the nature of his work, of the importance of libraries, experience seems to show that he is no better initially at using his materials efficiently than is the scientist, who at the beginning of his career needs a much narrower range of literature). But although with hindsight it is obvious what should be done, in practice it is not so easy.

I shall not waste your time by describing the so-called 'information explosion'—you all know exactly what this means in terms of the increase of published material, and I am sure many of you could quote from memory the type of statistics used by de Solla Price in his investigations of this subject[3]. What may not be so familiar to some of you is the way in which the average scientist (let us ignore for the moment the humanist) reacts to this difficulty.

Firstly, he still relies to some extent on the 'invisible college'. I was talking recently to one of the most distinguished American practitioners of operational research—a man with an international reputation, who has taken an active interest in problems associated with education, information transfer and libraries. In spite of this, he has not himself been in a library for many years: he maintains a personal collection of offprints, sent to him on a reciprocal basis from all over the world, and believes that these offprints, which he has organized by means of an edge-punched card subject index, will give him a better current-awareness and retrieval service than any library possibly could. He keeps them until his storage space is full, and then has his secretary weed out and destroy any which are more than a certain age, on the grounds that by then they are either in the conventional literature or superseded; in other words, he maintains a personal information service for his department. In his case this is a reaction to what he believes is a poor library service in his institution, but this is not an isolated phenomenon. A paper published recently in the *Journal of Documentation*[4] describes the recent growth of the news-letter phenomenon—the semi-published circular, distributed to members of an 'invisible college', and giving important data which never reach a wider public. This type of publication, and the growth of 'private communication' as a quoted reference in a paper lends weight to our impression that the average scientist has given up the struggle to use libraries—and recent investigations show some of the results that stem from this attitude.

The Advisory Council on Scientific Policy[5] has studied the information needs of physicists and chemists: one of their findings was that 28 per cent of a fairly large sample had been delayed in their research by ignorance of available published information. The National Lending Library has studied the use of Birmingham University Library[6] asking users why they had visited the library, what they had done, and whether they had been successful; of those who were looking for information, as opposed to specific books, 30 per cent had failed, and of these, two-thirds had *not* consulted a catalogue or librarian, but merely looked on what they thought was the correct shelf. A recent report on user needs by the Auerbach Corporation[7] stated that more than half of the information gathered by the sample had come from the 'invisible college', and only

5 per cent through conventional IR techniques involving a library, abstracts, bibliographies, etc. Coming closer to home, the Parry Report relates in Appendix 5 that only 37 per cent of undergraduates know what abstract services are, only 14 per cent have been taught to use them, 25 per cent do not know that their library has an author or subject catalogue, and 41 per cent do not know that there is an inter-library loan service. (These figures are based on a sample drawn from twenty-three different universities, thus indicating that the problem is widespread.) I could go on quoting figures like these at length, but I am sure that I have said enough to demonstrate that scientists, at least, are in urgent need of some kind of training in the use of libraries and information services. If further proof were needed, we only have to look at the results which have been obtained at the courses organized by the National Lending Library for postgraduate students and staff[8]: all the students claimed they had been helped, either by previously unknown publications or by the methodology of literature search which they had learned; almost half of them had altered details of their research projects as a result of new information, and one had abandoned his work on finding that it had already been done by someone else. Finally, the cost to the country, in real terms, of duplication of research runs into several millions of pounds each year[9, 10]—far less than would be needed to implant in the scientist the skills needed to avoid duplication, and indeed, probably considerably more than the total budget (for staff *and* books) of all the university libraries in Great Britain together.

Information about the library habits of the Arts man in our universities is harder to come by, since the major interest of the surveyors lies in science and technology; however, the various appendices of the Parry Report provide strong indications that their problem is of the same order of magnitude as the scientist's, and it may even be greater because of the lack of organization in the humanities in comparison, say, with the chemical literature.

I have stated the problem. I have also indicated a possible solution, following the lines of the 1949 Library Association Working Party. But as you all know, theory and practice are often very difficult to reconcile. What, then, has happened since 1948? What is happening now? And what do we think the future holds in this direction?

By 1955, according to MacKenna, only two or three libraries—and these small or specialized—had got beyond an introductory lecture in the first year, although most of them did at least this, as well as producing a printed or duplicated guide giving regulations, details of the catalogue and classification scheme, and describing the physical arrangement of the library. Then in the early 1960's two things happened which have had a profound effect on the whole concept of academic libraries in this country.

The first, in point of time, was the foundation of the University of Sussex in 1960, followed within three years by six other completely new institutions and the upgrading of about ten CATS. It is certainly true that the whole concept of academic libraries changed about this time in many ways. The new institutions deliberately set out to experiment in educational methods, and their libraries took part in—and even sometimes initiated—these experiments. It would, of course, be presumptuous of me to say that I and my six original colleagues were responsible for these changes: I think the truth is rather that professional thinking had developed to a point where change was seen to be desirable; and we happened to be able, because we were building from the foundations upwards, to put some of the new ideas into effect without treading on too many toes.

I could quote many instances of one of the new libraries being the first to experiment with a new technique—punched card or Bookamatic issue systems, tape-typewriters for catalogue cards, American-style reserve collections for much-used student texts, and so on; but for the present I would like to claim only one priority: Lancaster was the first university, so far as I know, to state in its formal regulations that each student must take a short course in library methods during his second year. Other libraries, I know, had run such courses for some of their students, and made a success of them; but they were optional and certainly selective. We nailed our colours to the mast, and I should like to take a little time to describe how this has worked out in practice.

Our first students—undergraduates in the non-laboratory subjects and research students in the sciences—arrived in 1964. At registration we arranged appointments for all the undergraduates to attend a short talk (about forty minutes) on the library and its use—a general introduction only, with a printed guide to provide the necessary details of classification schemes, sample catalogue entries, regulations, etc. This lecture was given in turn by myself and two other senior staff to groups of about twenty-five students, and afterwards they were shown round the library and given a chance to ask questions.

Simultaneously we issued invitations to all our science graduate students to attend a course of talks on their problems. We started with a showing of the National Lending Library film *At your request* and a description of the main problems facing them—the information explosion, in fact—together with some of the solutions we could offer; we provided guidance on the main types of literature, using the standard tools as examples, and on bibliographical citations and thesis-writing; instead of merely reciting lists of books we used printed information sheets, and tried to keep the lectures as non-specific as possible. Finally, we took each student through a demonstration literature search, and asked him to conduct a search himself, under supervision, on a topic related to his own researches. The total time taken by the course was about six hours, spread over two weeks; as a bonus, or incentive, we hired a bus to take them all on a visit to the National Lending Library.

At the beginning of our second year (the time when Lancaster students select their major subject) we arranged with each teaching department to send its students to the library for two one-hour seminars on library methods. The first of these was taken up by an explanation of the thinking behind a catalogue and classification, and by a description of the way to use reference works of a general nature (encyclopaedias, bibliographies, etc); the second seminar was devoted to the bibliographical aids which the student ought to know if he is to become competent in his own subject. To give incentives to attend, we issued a series of questions, based on reference tools and demonstrating that a library was a device for finding out as well as a collection of required reading.

This triple pattern of teaching (first year, second year, research) is still being used, but various modifications have been introduced over the past four years. Instead of the first-year introductory lecture tour we now use a taped commentary linked to about a hundred slides; this has, we believe, more impact than a straight lecture, and is much more economical in staff time, as well as avoiding the disturbance to other readers which a tour inevitably causes. We have plans to produce a film to replace this illustrated lecture next year.

Our second-year student programme has in some cases been stretched beyond the original two hours and in some reduced to one hour; this depends partly on the extent to which departments themselves give bibliographical instruction and partly on their willingness to make time available within their own timetables. We should very much like to extend our programme to four to six hours, and bring members of the departments into the teaching, but there are obvious difficulties about this.

Paradoxically our post-graduate teaching, which is perhaps the most essential segment, has met with very mixed success. In those departments (OR, marketing, mathematics) where we have been able to induce members of staff to take part, the response has been very encouraging; but in others, the staff have been reluctant to make time available to us or to encourage their students to attend. As a result, in these subjects we have largely had to rely on personal contacts and informal instruction on an individual basis by the appropriate subject specialist member of the library staff.

I shall return later to the lessons we have learned from our first four years; but now I should like to mention the second development of the early sixties—the assumption by National Lending Library of the leadership in graduate teaching in the sciences. In 1962, about the same time as the universities were beginning to think about the need for organized courses, Dr Urquhart and his staff at Boston Spa began to run seminars (ranging in length from three to ten days) for various groups—initially science research students, but later for academic staff, university librarians, information officers, public librarians and library school staff.

The National Lending Library now regards these courses as a pump-priming operation: it cannot itself teach all the graduate students, but it can encourage them by propaganda, and it can train library staff to carry on where it leaves off. Up to September 1967, 145 members of university library staff, 110 academic staff and eighty-seven post-graduates have attended courses at the National Lending Library, and the grand total of all categories attending twenty-nine courses in six years is 437[11]—it is known that librarians at least apply in far greater numbers than can be accommodated; this, and the attendance at two one-day meetings organized by NLL to discuss the problems of library teaching, show that most universities are taking the provision of teaching seriously.

The present position was summarized at the latest meeting at NLL; twenty-two of the forty-five British universities were represented, and of these seventeen provided formal teaching at some level for some departments, while the remaining five provided at least a basic lecture or tour, and intended to make better arrangements in the near future. (These figures are not necessarily representative—universities which are most active would naturally attend the meeting.)

Of the seventeen libraries known to be providing formal teaching, however, the majority were concentrating on the sciences and on post-graduate students: only eleven libraries made any provision for undergraduates, and only three included lectures to non-scientists in their programmes. One of these, my own university, has already been mentioned; the second, Reading, is worthy of note because it has appointed a senior member of the library staff specifically to run courses for scientists, as well as students in the faculties of letters and agriculture. Seminars are organized for groups of ten; each student attends two, at intervals of two or three weeks, with a practical test between; 70–80 per cent attendance is reported, since the seminars are compulsory. The third library to run courses for non-scientists is Southampton, where attendance varies from 40–100 per cent; an information officer has recently been appointed and will be responsible for organizing courses in future.

NLL itself has been of assistance in running the scientific courses; it has supplied lists of literature, specimen sets of reference tools, films and occasionally staff to help in lecturing; altogether it has really been the body providing the impetus behind this comparatively new movement within the universities.

I have devoted some time to describing the problem and some of the answers which have been adopted up to now. I would be the last to claim that any of the universities have found the perfect answer, because there are still many difficulties to be overcome: I should now like to consider these and some possible solutions.

The difficulties fall into three main groups: those which are a result of the attitudes of the university as a whole to its library, those which derive from the organization and structure of the library itself—these two types of difficulty are sometimes linked together; and lastly, the intellectual problem of providing a satisfactory course.

1. Attitudes of students and staff to the library depend partly on the type of service which is offered, and partly on the previous experience of the reader (in school or in other university libraries). If the Professor of Exobiology has been accustomed to work in the University of X—you may fill in the name for yourself—where the library is devoted solely to the collection and custodianship of books, he is not likely to be impressed by the wish of the librarian at Y to teach him, his staff and students how to use the literature; he will argue that (*a*) he knows more about it than the library staff; (*b*) that his students will learn all they need to know from him, and (*c*) that the library should be concentrating on eliminating its backlog of cataloguing instead of wasting everybody's time. The only way of countering these arguments is by example: if the library can demonstrate that it *can* solve a few knotty problems for him, and if it shows a willingness to integrate departmental staff in its teaching programme, he is likely to be more willing to co-operate. A visit to NLL, if he can be persuaded to go, will often help to prove that he does not know all the answers.

The department's view of what is required will often conflict with the library's; this is probably due to ignorance on both sides, which makes it all the more important that both should take part in the teaching, and thus learn from each other, and gradually modify their attitudes (this is brought out very clearly in the account of the Monteith College library experiment in the USA[12]).

The department should also be consulted on the timing of the seminars, which should come at the correct moment in the year's programme—not right at the beginning, before the student has adjusted to his new circumstances, but not too late to be of use (for example, after a research student has already done a literature search).

2. The major difficulty which faces a librarian when he decides to organize teaching is finance. As anyone who has tried it knows, a properly organized course takes time to develop and time to deliver; this type of teaching is best done in groups of not more than ten students, and if you are faced with a class of fifty to one hundred this can mean up to sixty hours actual teaching for one six-hour course. Multiply this by twenty or thirty departments in the university, and add the time taken to prepare lectures, and the result is that a full teaching programme could mean virtually the equivalent of three or four senior staff spending all their time on it. As I pointed out earlier, the gain to the national economy of such a programme would be many times the expenditure, but how many Vice-Chancellors would agree to an item of £5-10,000 a year appearing in a library budget with no measurable benefit coming from it? This requires an act of faith, and I suggest that the best way is to start with one or two lectures and gradually expand.

Another difficulty is obtaining staff of the right quality to do the teaching: as you will all no doubt be aware, the qualities which make a good cataloguer—a custodian of books—are not necessarily or usually those found in a teacher, and too many of our colleagues still think that a library is a place where books are *kept*. I have described elsewhere[13] the philosophy which I believe ought to underlie any active library, and the ideal staff structure, modelled on the German three-tier system: a layer of subject specialists, each responsible for the total library service to a group of related teaching departments, from book-selection to exploitation of the library's contents; a layer of professionally qualified non-graduates, to do the more routine tasks of acquisition, cataloguing, circulation, etc., and a layer of junior and clerical assistants. I believe (and experience at Lancaster indicates that I am correct) that if we remove from the graduate layer many of the routine chores of running a library, then the quality of the recruits applying for posts will rise; many of them will have research degrees or other desirable qualifications—they will not be the failed teachers or third-rate scientists we have so often seen coming into the profession, because we shall be offering them interesting and challenging work to do—and this is the type of person we want if we are to teach successfully. Since they are not tied down to library routine to the same extent they can use their time more flexibly; thus the three-tier structure meets some of the objections I raised earlier: the subject specialist graduate can find the time to teach more easily; he can earn the respect of the teaching departments by being their intellectual equal, and he is more likely to make an effective teacher than the traditional British assistant librarian.

3. It is not easy to devise a satisfactory course-pattern for this type of teaching: obviously something fairly basic is needed for the freshman as an introduction to the strange (and frightening) surroundings of a large collection of books, and since these freshmen arrive in large numbers (possibly one thousand at a

time) conventional lectures and guided tours are difficult to arrange. Three libraries in this country have produced films explaining basic techniques, and at least one is investigating ccTV for this purpose (videotape can be erased and used again for revised versions, while a whole new film might need to be made, thus increasing costs). I have wondered whether experiments with teaching machines, using slides or film and tapes, might be justified—but a teaching machine programme is expensive to write. Perhaps one of our library schools might look at this possibility, using American experience as a guide—I am sure that OSTI would consider financing such an experiment, because the potential national gain is enormous. (In passing, it is worth noticing that student motivation is an important factor in the use of such devices—one problem would be to devise a method of ensuring that they were used.)

There is general agreement that the length of courses for more senior students should be not less than four hours; that preprinted notes should be distributed, both for accuracy and to let the students give undivided attention to the lecturer; that instruction in the use of the library should be included as well as in the use of the appropriate literature, and that an adequate amount of practical work is essential (not merely looking at reference tools, but using them in a real situation). A further important point is that instruction should be time-tabled, and, as far as possible, compulsory—there is nothing more dispiriting than to prepare a course and find that no students attend! Apart from this, obviously the content and method of courses must vary according to the subject and level of the students, and it is up to each library to devise its own solution.

I have dwelt, according to my brief, entirely on the scene in Britain; there are other interesting experiments in this area both in the United States and in Central Europe[14]. One thing, however, is certain: the trend towards library teaching is gathering speed, and has now reached a stage where its future development has become inevitable.

REFERENCES

1 MACKENNA, R. O. Instruction in the use of libraries: a university library problem, *Journal of Documentation*, 11, ii, 1955, p. 65–72.

2 *Library Association Record*, 51, v, 1949, p. 149–50.

3 DE SOLLA PRICE, D. J. *Little science, big science*. Columbia UP, 1963.

4 WYATT, H. V. A tentative list of research newsletters in the biological sciences, *Journal of Documentation*, **23**, iv, 1967, p. 321-5.

5 Survey of information needs of physicists and chemists, *Journal of Documentation*, **21**, ii, 1965, p. 83–112.

6 UNIVERSITY GRANTS COMMITTEE. *Report of the Committee on Libraries* [The Parry Report]. HMSO, 1967. Appendix 3.

7 AUERBACH CORPORATION. *DOD user needs study, phase I*, Final technical report 1151—TR–3. 2 vols. Philadelphia, 1965.

8 Unpublished communication.

9 MARTYN, J. Unintentional duplication of research, *New Scientist*, **21**, no. 377, 1964, p. 338.

10 COLE, P. F., *and* BROCKIS, G. J. How much information work? *New Scientist*, **36**, no. 565, 1967, p. 36.

11 WOOD, D. N., *and* BARR, K. P. Courses on the structure and use of scientific information, *Journal of Documentation*, **22**, i, 1966, p. 22–36.

12 KNAPP, P. B. *The Monteith College library experiment*. Scarecrow Press, 1966.

13 MACKENZIE, A. G. A new university prospect: service, staffing, equipment and methods, *Aslib Proceedings*, 17, iv, 1965, p. 112–18.
14 TIDMARSH, M. N. Instruction in the use of academic libraries. *In* SAUNDERS, W. L. (ed.), *University and research library studies*. Pergamon Press, 1968, p. 39–83.

Letter to the Editor

Dear Sir,

Assessment of information services

May we please raise four questions which are important at the present time when Government policy on information retrieval is being considered? These arise from results recently produced by SDC which are germane to Dr Somerfield's paper on 'Computer-based Information Services' (*Aslib Proceedings,* 20, 12, 542-50 (1968)), and to OSTI's work in this field.

The SDC is making comparisons of the efficiency of various published indexes and other sources of scientific information and the first results of rigorously checked comparisons are becoming available for a case study on the subject of 'Computers Related to Mass Spectrometry'. This results from an extensive literature search prepared by combining and collating results of searches in twelve of the world's major indexes to chemistry and spectroscopy, including searches of SDC's own data bank files. Nearly two hundred unique references on 'Computers Related to Mass Spectrometry' were found and are being checked individually for relevance, going back to the original paper or asking expert opinion where necessary. Once this checking is completed, the work will be published*[1]. Some remarkable results are, however, becoming very clear:

(*a*) No one source located more than 40 per cent of the references found.

(*b*) The best two sources were produced by small units. The largest chemical indexes produced by the world's largest indexing organizations (*Referativnyi Zhurnal Khimii*; *Chemical Abstract Subject Indexes*, *Chemisches Zentralblatt*) only produced about 5.5 per cent, 24.0 per cent and 4.5 per cent respectively of the references found.

(*c*) The 24 per cent retrieval from CA was only obtained by checking every item under both mass spectrometry, etc., and computers, etc., in the three years' indexes covered and required checking of some five thousand items—about ten hours' work. Direct look-up gave only about half the number of references.

(*d*) All the references from *Chemisches Zentralblatt* were unique to that source—because they were so out-of-date that none of the other ten sources covered them in the period searched.

(*e*) Searching of Chemical Titles, simulating a computer search of CT tapes, gave 11.5 per cent of the total number of references found—just over one-quarter of the retrieval from the best single source.

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*SDC Report No. S/15/37, 1968, is an interim report on this project. It may differ in detail from the final report in that a small number of references are still being sought to check their relevance.

The results are briefly as follows. Total number of references found from eleven sources, 183. Percentages of these retrieved by individual sources were: SDC *CAS*, 39 per cent; *Mass Spectrometry Documentation Centre* 32 per cent (only available for part of the period of study); *CA Subject Indexes* 24 per cent; *Science Citation Index* 21.5 per cent; *Chemical Titles* 11.5 per cent; US Atomic Energy Commission *Bibliography of Mass Spectrometry* 11 per cent; *CA* pink indexes (basis of the *CA* Condensates system) 10.5 per cent; *Science Abstracts* 8 per cent; *Referativnyi Zhur. Khim.* 5.5 per cent; *Chem. Zentralblatt* 4.5 per cent; *Anal. Abstracts* 3 per cent; Miscellaneous sources 5.5 per cent (*Sira Abstracts* covered after this count located about 6 per cent).

This raises four points with an important bearing on the development of information retrieval in this country: each leads to a question needing to be answered if major computerized data banks are to be set up.

1. Dr Somerfield's paper presupposes that computers will form the basis of information services for scientists in coming years. Our results suggest that computers will not yet supply efficient services, and this is confirmed by Lancaster's studies of Medlars.[2] Moreover, there are growing indications that computers are one of the most expensive methods for operating CAS/SDI services*. It is remarkable that Dr Somerfield himself should say of the large expenditure on application of computers to information retrieval that 'at the present time, it seems probable that this work will not result in cheaper abstract publications, and initially will only help to maintain the present level of services'. The average cost of fortnightly CAS/SDI computerized title services in chemistry has been quoted at £47[3] per annum by the Chemical Society Information Unit at Nottingham. By comparison, the average cost of SDC's manually operated weekly CAS/SDI services was about £27 per annum during the same period, and there are indications that for spectroscopic and analytical subjects at least, SDC retrieved substantially more material. Several case studies on spectroscopic subjects suggest that about four times the number of references may be found by manual services which cover a proportion of the original journals page by page. Counts of the number of references to spectroscopic topics in the subject indexes of *Chemical Abstracts* itself (*not Chemical Titles!*) show about the same numbers of references as the numbers retrieved by SDC's own services. Another important factor is that SDC's costings are based on production of single copies of many services; as our methods have the cost benefits of printing, unit costs drop sharply with increased usage: a major cost in both SDI systems is the number of items which have to be printed out, and as usage of manual services grows so will the value-for-money advantage.

Question One

As the majority of Government expenditure on information projects is directed at present to computerized systems, this raises the question of what evidence is there that computers form the most efficient method available at this time, and for the foreseeable future, for the operation of SDI/CAS services?

2. Dr Somerfield lays great emphasis on the size of the *Chemical Abstracts* operation and the large staff it employs. This is, of course, true but the staff employed by VINITI in Russia in producing the *Referativnyi* series of journals is very much larger still (in 1966 it employed 2,500 staff and 22,000 part-time specialist assistants[4]) yet it is remarkable how low were the retrievals in our tests from these sources.

Superficial study shows apparently good and logical reasons why large size should increase the efficiency of an organization, e.g. where large-scale mass production allows the use of highly sophisticated machinery. There are, however, also very definite reasons for *decreasing* efficiency following *increase* of size. These reasons are mostly psychological or sociological and are related to the difficulties of communication between individuals. Though they are not always too easily apparent, they are very real, and have a growing literature[5-12]. Which factors are more important in the essentially human science of information retrieval is not yet *known*, but our results do not show the large organizations giving good retrieval. In fact, the retrievals from *Referativnyi Zh. Khimii* (produced by VINITI, the largest and most bureaucratic of all the information processors in the world[4]) and from *Chem. Zentralblatt*, both of which retrieved only about one in twenty of the references found, were remarkably bad. Anyone depending on one of these sources for this search would have missed nineteen out of twenty of the references he wanted. It can be argued that a case study may not be typical of other subjects, but this is the only one we have carried out rigorously and it has not been selected on the basis of its result: other evidence quoted above confirms qualitatively these general conclusions.

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*SDC has been carrying out a survey of the literature on costs of information retrieval for some years.

Question Two

If any kind of centralized and perhaps Government-controlled information project is planned, what studies have been made to assess the efficiency of such major information handling projects, and what are the results of these studies?

3. A point relating to the methods of assessing the efficiency of information sources is also worth raising. In SDC's assessments (including those of our own services), all assessments have been based on (*a*) attempts to obtain the total population of known references on the subject under study, and (*b*) the relevance of references has been checked against a pre-stated set of terms of reference. In other words, we have attempted:

(*a*) to measure retrieval efficiency in the terms which really matter to the practising scientist who wishes an efficient service retrieving all the relevant information in the whole literature, and who wishes to know how efficiently the service he is using does this, and

(*b*) to measure relevance in terms which can be repeated by other workers—normally regarded as a basic requirement of any scientific experiment.

Unfortunately, many assessments of the efficiency of computerized information services quoted nowadays (usually by persons connected with the services themselves) make their measurements in terms of the efficiency of the system in retrieving information *from its own data file only*. These measure the efficiency of the computer and its programme in extracting data from its own data base only but conveniently forget that the data base is almost certainly incomplete—sometimes very incomplete indeed! This incompleteness can arise either because the computer does not have the reference at all, or because it does not have that reference coded under the code required for that search. Such results give exciting recall efficiencies—sometimes 80 per cent or 90 per cent; though these are correct assessments of the technical efficiency of the system, they are both false and completely misleading as measures of its real efficiency in bringing to the user all the information from the general literature on the subject he wants.

There is also a fashion today for assessing relevance in terms of what the user *says* is useful to him, instead of in terms of meeting or failing to meet terms of reference laid down for the retrieval system when the experiment started. Precise definitions are difficult in some subjects (e.g. human sciences) but are easier in the natural sciences. Use of value judgments to assess relevance means that the system can retrieve exactly what is initially requested but only what the user selects from this and defines as being 'relevant' is counted. Such assessments of relevance introduce a human value judgment—an interface—which cannot be repeated by anyone else and which makes experimental results based on it difficult to evaluate [13,14]. Such results really disguise the fact that the (often difficult) task of coding the user's terms of reference into the language of the system has not resulted in a complete match. It may be that a complete match cannot be obtained but it would be more useful if this was known, and the reasons for mismatch identified.

Assessments of the efficiency of services which give misleadingly hopeful results by taking unreal bases of measurement—rubber rulers—*may* be good for the salesman but *are undoubtedly* bad for the customer. If used extensively, they can only lead to inferior systems gaining wide acceptance because their weaknesses are hidden. Assessment of information services, and especially location of material which they have missed, is, by its nature, very tedious and time-consuming, and the user practically never has time to do this for himself.

Question Three

Can we be assured that assessment of officially sponsored systems will give a fair picture of their real efficiency at retrieving the information wanted from the *total* available in the general literature?

4. During the last seven years SDC has gained considerable experience—longer than anybody else—of the operation of CAS/SDI services. During this time we have developed means of manual operation of services for CAS/SDI and for retrospective searching which offer great promise both in terms of efficiency of retrieval and economy of operation. This type of method could be extended quite readily to provide retrospective searching facilities covering the whole field of science and technology and the cost of doing this would be relatively small—and very much less than the cost of comparable computer systems for the foreseeable future. If computer systems become advantageous, the files could, of course, be readily transferred to tapes.

Question Four

What official action has been taken in the past to develop and assess the potentialities of manual systems for operation of Current Awareness, Selective Dissemination of Information and Retrospective Searching Services and, if computerized systems are to be widely adopted at this time, possibly with public backing, what results showed them to be advantageous?

Yours faithfully,

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D. A. R. MATTHEWS

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Dunfermline,
United Kingdom.
15*th May* 1969.

REFERENCES

1 *A case study comparing sources of information for chemists.* SDC Report S/15/37, 1968.

2 LANCASTER, F. W. *Evaluation of the MEDLARS demand search service.* US Nat. Lib. of Medicine, Bethesda, Md, USA (PB 178 660).

3 *Bulletin,* no. 7, The Chem. Soc. Res. Unit in Inf. Diss. & Retreival.

4 MIKHAYLOV, A. I., *et al. Organization of scientific and technical information in the communist world.* 1966 (AD 627 802).

5 SAMUELS, J. M., *and* SMITH, D. J. Profits, variability of profits and firm size. *Economica,* p. 127–39, May 1968.

6 *Britain's small firms: their vital role in the economy.* Confederation of British Industry, Sept. 1968.

7 COOPER, A. C. R & D is more efficient in small companies. *Harvard Business Review,* p. 75–83, May/June 1964.

8 STECKLER, H. O. Variability of profitability with size of firm, 1947–58. *Amer. Stat. Assoc. J.,* p. 1183–93, Dec. 1964.

9 ALEXANDER, S. The effect of size on the distribution of rate of return. *Rev. of Economics & Stat.,* p. 229–35, August 1949.

10 CHAMBERS, S. P. *The problems of size.* Intern. Management Congress, September 1966, Rotterdam. (*Management Abs.,* 7, 1, p. 23–4, January/March 1967.)

11 MCGUIRE, J. W., *and* ARCHER, S. H. Size distribution in industry and the growth of the firm. *Quart.* R. *Econ. Business,* 5, 4, Winter 1965.

12 BROES, F. La dimension des enterprises. *Rev. du Marché Commun.,* Paris, no. 99, p. 85, Feb. 1967.

13 O'CONNOR, J. Relevance disagreement and unclear request forms. *Amer. Doc.,* 18, 3, p. 165–77, 1965.

14 BARRET, G. V., *et al.* Human factors evaluation of a computer based information storage and retrieval system. *Human Factors,* **10,** 4, p. 431–6, 1958.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

*Items are available in the Aslib Library and may be borrowed unless marked * to indicate reference copies.*

User Studies

ALEKSANDROVA, I. F.
Izuchenie zaprosov potrebitelei informatsii—odin iz glavnykh etapov razrabotki otraslevoi IPS.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.1, 1969, p.12-17.
User request study—a step in the development of a branch information retrieval system.

LEITH, JOHN D.
Biomedical literature: analysis of journal articles collected by a radiation- and cell-biologist.
American Documentation, vol.20, no.2, April 1969, p.143-8.
Analysis according to three interest patterns shows that although a few journals supply most of the useful articles, access to diverse journals is needed to supply new ideas.

WOOD, D. N.
Library education for scientists and engineers.
Bulletin of Mechanical Engineering, vol.8, no.1, February 1969, p.1-9.
User education courses currently offered in Britain.

Library Systems

PITERNICK, GEORGE
University library arrearages.
Library Resources and Technical Services, vol. 13, no. 1, Winter 1969, p.102-14.
Results of a survey of processing arrearages in American and Canadian University libraries.

HARRISON, K. C.
Libraries in Scandinavia, 2nd ed.
London, Andre Deutsch, 1969.
288 p., illus.

TELL, BJORN V.
Scandinavian developments in documentation and information services.
Library Trends, vol.17, no.3, January 1969, p.289-98.

BURIAN, KISMET
Turkish scientific and technical documentation centre.
Unesco Bulletin for Libraries, vol.23, no.2, March-April 1969, p.88-90.
TURDOK, established in 1967, a service of the Scientific and Technical Research Council of Turkey.

REICHARDT, GUNTHER
Trends of developments in the information systems of the Soviet Union and the Comecon countries.
Library Trends, vol.17, no.3, January 1969, p.318-25.

MARDER, J. V., *and others*
Co-operative projects: a descriptive pamphlet, prepared by the Librarians of Institutes and Schools of Education.
Southampton, University of Southampton Institute of Education Library, 1969.
ii, 18 p.

MARDER, J. V.
Co-operative acquisition of materials on education overseas.
In
MARDER, J. V.
Co-operative projects, 1969, p.11-16.

MARDER, J. V.
Co-operative storage of obsolescent textbooks.
In
MARDER, J. V.
Co-operative projects, 1969, p.9-10.

Administration and Management

SIMON, BEATRICE V.
The need for administrative know-how in libraries.
Bulletin of the Medical Library Association, vol.57, no.2, April 1969, p.160-70.
Problems of administration in libraries do not differ significantly from those in other organizations and librarians should be aware of modern management theory.

DIJK, G. VAN
De kleine speciale bibliotheek en zijn bibliothecaris.
Open, vol.1, no.5, May 1969, p.304-6.
The small special library and its librarian; inadequacies and shortcomings.

MAIER, JOAN M.
Analyzing acquisitions and cataloguing costs.
Library Resources and Technical Services,

vol.13, no.1, Winter 1969, p.127-35.
The Colorado Academic Libraries Book Processing Center (CALBPC) method.

LEONARD, LAWRENCE E.
The Colorado academic libraries book processing center project time study methodology.
Library Resources and Technical Services, vol.13, no.1, Winter 1969, p.116-26.

DOUGHERTY, RICHARD M.
Cost analysis studies in libraries: is there a basis for comparison?
Library Resources and Technical Services, vol.13, no.1, Winter 1969, p.136-41.

HEINRITZ, FRED J.
Optimum allocation of technical services personnel.
Library Resources and Technical Services, vol.13, no.1, Winter 1969, p.99-101.
A procedure for determining optimum allocation of available man hours among various technical processes, with cost implications also discussed.

BIRD, WARREN
TWX and interlibrary loans.
Bulletin of the Medical Library Association, vol.57, no.2, April 1969, p.125-9.
Use of the Teletypewriter Exchange Service by medical libraries during the past three years.

FRANZ, RUDI
Rationalisierung der Beschriftung von Katalogkasten im Sachkatalog der Deutschen Bucherei.
Zentralblatt für Bibliothekswesen, vol.83, no.3, March 1969, p.152-4.
Simplification of the labelling of catalogue card drawers.

BANKS, PAUL N.
Paper cleaning.
Restaurator, vol.1, no.1, 1969, p.52-66.
Describes several methods; dry cleaning, use of solvents, bleaching and other wet cleaning methods.

Printing and Publishing

SPENCER, HERBERT
The visible word: problems of legibility, 2nd ed. rev. London, Lund Humphries, 1969.
107 p., illus.

ROYAL SOCIETY. Symbols Committee
Symbols, signs, and abbreviations recommended for British scientific publications: a report . . . London, the Society, 1969.
44 p.

BRITISH STANDARDS INSTITUTION
Specification for the presentation of conference proceedings. London, the Institution, 1969.
11 p. (BS 4446: 1969.)

BEVER, ARLEY T.
The duality of quick and archival communication.
Journal of Chemical Documentation, vol.9, no.1, February 1969, p.3-6.
The relative strengths and weaknesses of formalized, centralized preprint exchanges when organized around a profile of interest, phenomenon or problem area.

WARNER, W., *and* DAVIES, J. ERIC
Some notes on the treatment of student project reports and theses in institutions of higher education.
Library Association Record, vol.71, no.5, May 1969, p.139-41.
Summary of results of a questionnaire, covers copyright, availability and publication.

HÉBERGER, KÁROLY
Scattering of papers and articles on mechanical engineering in scientific and technical periodicals.
Tudományos és Muszaki Tajékoztatás, vol.16, no.2, February 1969, p.89-104.

NOWELL-SMITH, SIMON
A University's perpetual copyright.
Times Literary Supplement, no.3507, 15 May 1969, p.540.
Describes the history of copyright laws as applied to the Universities and suggests that perpetual copyright should be abolished.

Reprography

MAIN features of electrostatic photocopiers designed for the use of material without a photo-conductive layer.
Office Machine Guide, no.77, April 1969, p.11-15.
Nine photocopier models manufactured by Rank Xerox are surveyed for the type of copy produced and the method used.

JUDISCH, J. M.
The effect of positive-negative microforms and front-rear projection on reading speed and comprehension.
NMA Journal, vol.2, no.2, Winter 1968-9, p.58-61.
Greatest reading speed and comprehension were obtained with positive microform images; front-rear project techniques did not differ significantly.

KUNDORF, W.
Einsatz moderner Verfahren und technischer Mittel der Dokumentenreproduktion.
Informatik, vol.16, no.1, 1969, p.36-44.
Document reproduction and storage by means of microfiche. Details of readers, enlargers and microcopiers are given.

KODAK AG
Mikrofilm—System als Rationalisierungsmittel im Patentwesen der Industrie.

Nachrichten für Dokumentation, vol.20, no.2, April 1969, p.85-6.
A microfilm system as a means of rationalizing patent organization in industry.

WHITE, JOHN R.
Microfont—a new letter style for microfilm.
NMA Journal, vol.2, no.2, Winter 1968-9, p.53-5.
Lettering style for draughtsmen, suitable for microform systems, has been standardized and modified for machine use.

MOREHOUSE, HAROLD G.
The future of telefacsimile in libraries: problems and prospects.
Library Resources and Technical Services, vol.13, no.1, Winter 1969, p.42-6.
Problems are lack of suitability of equipment, high cost and a general lack of understanding among librarians of the need for such a service. Prospects for improvement include new technical developments and the benefit of the experience of Pennsylvania State University.

Subject Organization

VALENTI, MARIA, *and* CAROSELLA, MARIA PIA
Special libraries in Italy.
Inspel, vol.4, no.1, January 1969, p.28-34.

SPECIAL libraries [in Norway]
In
HARRISON, K. C.
Libraries in Scandinavia, 1969, p.169-76.

SCIENTIFIC and research libraries [in Denmark]
In
HARRISON, K. C.
Libraries in Scandinavia, 1969, p.28-32.

SPECIAL libraries in Sweden
In
HARRISON, K. C.
Libraries in Scandinavia, 1969, p.96-105.

MEADOWS, A. J., *and* O'CONNOR, J. G.
An investigation of information sources and information retrieval in astronomy and space science. Part I: text. [Leicester], the University, 1969.
[11] p.

MEADOWS, A. J., *and* O'CONNOR, J. G.
An investigation of information sources and information retrieval in astronomy and space science. Part II: Tables. [Leicester], the University, 1969.
[29] p.

JONES, J. O.
Information and communication: the services of the Commonwealth Bureau of Agricultural Economics.
Journal of Agricultural Economics, vol.20, no.1, January 1969, p.25-44.

BRENNER, EVERETT H., *and* HELANER, D. P.
Petroleum literature and patent retrieval. Centralized information processing.
Special Libraries, vol. 60, no.3, March 1969, p.146-52.
The abstracting and indexing services of the University of Tulsa Information Services Department and the American Petroleum Institute.

BAKEWELL, K. G. B.
Management and productivity.
International Library Review, vol.1, no.1, January 1969, p.131-42.
Significant developments in international and British librarianship, bibliography and documentation of management and productivity since January 1967.

Mechanization

HAGLIND, J. B., *and others*
Storage and retrieval of agricultural screening data.
Journal of Chemical Documentation, vol.9, no.1, February 1969, p.37-9.
A formatted means of entering laboratory results in notebooks, key punching the data on to cards, and processing the card file on to a disk for random access of data.

BERUL, LAWRENCE
Applications of computers to the information products and services business: a state-of-the-art review.
NMA Journal, vol.2, no.3, Spring 1969, p.85-7.

WARHEIT, I. A.
File organization of library records.
Journal of Library Automation, vol.2, no.1, March 1969, p.20-30.
The serial file with a series of inverted indexes is preferred to the simple serial file or a threaded list file. Discussion of storage methods to achieve optimum cost-performance.

COOK, BRENDA M.
Libraries and computers: a personal impression of the conference held at the University of Strathclyde on February 19th 1969.
SLA News, no.89, January-February 1969, p.238-43.

WIGGINS, EMILIE V.
The NLM current catalog.
Bulletin of the Medical Library Association, vol.57, no.1, January 1969, p.36-40.
The National Library of Medicine *Current Catalog* of books computer-produced, is issued every two weeks with quarterly and annual cumulations.

PROJECT INTREX semiannual activity report 15 September 1968 to 15 March 1969.
Cambridge, Mass., Massachusetts Institute of Technology, 1969.
35 p., illus. (PR-7.)

AUSTIN, CHARLES J.
Time shared computing: implications for medical libraries.
Bulletin of the Medical Library Association, vol.57, no.2, April 1969, p.116-24.
Problems concerning the cost and present state of the art of time sharing are discussed.

HARRISON, DAVID J., *and others*
An automated music programmer (MUSPROG).
Journal of Library Automation, vol.2, no.1, March 1969, p.1-9.
A system to compile programs of recorded music for broadcast by the University of Iowa's radio stations.

Classification and Cataloguing

PORTLOCK, NYLAH
Nursing school library classification systems.
Special Libraries, vol.60, no.1, January 1969, p.32-4.

ELSNER, HERMANN A.
Die DK in deutschen Zeitschriften.
DK-Mitteilungen, vol.14, no.1, January 1969, p.2-5.
A study of 196 technical periodicals in Germany using UDC.

DATTOLA, R. T.
A fast algorithm for automatic classification.
Journal of Library Automation, vol.2, no.1, March 1969, p.31-48.
An economic classification process of order n log n (for n elements) and which does not employ n-square procedures; conversion proof and possible information retrieval applications.

CLUGSTON, KATHARINE W.
Anglo-American cataloguing rules: film cataloguing at the Library of Congress.
Library Resources and Technical Services, vol.13, no.1, Winter 1969, p.35-41.
Problems of film cataloguing using AA and DAVI rules.

SMALL, CAROLYN A.
Anglo-American cataloguing rules: selection and form of entry.
Library Resources and Technical Services, vol.13, no.1, Winter 1969, p.26-31.
Problems of reorientation and training of staff and integration of the new rules into the older catalogues.

LANGKER, ROBERT
User and compiler—a basis for the teaching of cataloguing.
Australian Library Journal, vol.18, no.2, March 1969, p.41-6.
Discusses the need for teaching cataloguing from the point of view of the compiler or cataloguer and also of the user, and describes suitable syllabi.

NITECKI, JOSEPH Z.
Simplified classification and cataloguing of microforms.
Library Resources and Technical Services, vol.13, no.1, Winter 1969, p.79-85.
A method of classifying and cataloguing the microform collection in a modern university library.

Language and Indexing

TYBULEWICZ, A.
Languages used in physics papers.
Physics Bulletin, vol.20, January 1969, p.19-20.
A study of physics literature shows English as the major language, Russian in second place, German and French third.

COEN, JAMES A.
An investigation of indirect subdivision by place in Library of Congress subject headings.
Library Resources and Technical Services, vol.13, no.1, Winter 1969, p.62-78.
LC subject headings in which indirect subdivision was used were compared with a list published by LC in 1935, and changes noted.

LYNN, KENNETH C.
A quantitative comparison of conventional information compression techniques in dental literature.
American Documentation, vol.20, no.2, April 1969, p.149-51.
A word count of 93 articles, compared with their abstracts, showed an average article of 1,963 words compressing into a 178-word abstract.

MAKSIMOVA, V. V., *and* PETROV, M. G.
Metodika obrabotki zaprosov abonentov sistemy izbiratel'nogo raspredeleniya informatsii. Postroenie chastotnogo slovarya IPS.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.1, 1969, p.18-24.
Processing interest profiles SDI service users; compilation of the system word frequency list.

SHERMAN, ALONZO J.
Keyword indexing for microfilm.
NMA Journal, vol.2, no.3, Spring 1969, p.89-93.
This technique selects keywords from the data by a computer routine, and subsequently lists the keywords in alphabetical order for easy referencing.

COLOMBO, D. S., *and* RUSH, J. E.
Use of word fragments in computer-based retrieval systems.
Journal of Chemical Documentation, vol.9, no.1, February 1969, p.47-50.
A pair of dictionaries is described which makes possible the selection of appropriate fragments both for 'generic' retrieval and for retrieval of specific words.

SCHLESSINGER, B. S., *and others*
A new approach to indexing technical reports in an industrial information centre.
Journal of Chemical Documentation, vol.9, no.1, February 1969, p.51-3.
Indexing output is stored on punched cards and can be used to generate printed indexes.

PRATT, A. W., *and* PACAK, M.
Identification and transformation of terminal morphemes in medical English.
Methods of Information in Medicine, vol.8, no.2, April 1969, p.84-90.
Information system for processing pathological data developed at the US National Institutes of Health.

GARDIN, NATACHA
The intermediate lexicon: a new step towards international co-operation in scientific and technical information.
Unesco Bulletin for Libraries, vol.23, no.2, March-April 1969, p.58-63.
A selection of descriptors assigned and defined in any language to identify correlations between documentary lexicons.

KRAUTWURST, JORN
Die Beurteilung eines Thesaurus mit informationstheoretischen Hilfsmitteln.
Nachrichten fur Dokumentation, vol.20, no.2, April 1969, p.68-72.
Evaluation of a thesaurus using a mathematical formula, associated with Zipf's Law.

KOMITEE Terminologie und Sprachfragen in der DDR.
Nachrichten fur Dokumentation, vol.20, no.2, April 1969, p.87-8.
Gives definitions of all different forms of thesaurus.

WALL, EUGENE
Vocabulary building and control techniques.
American Documentation, vol.20, no.2, April 1969, p.161-4.
Creation of a controlled indexing and retrieval vocabulary; terminological conventions for vocabulary control and their application in thesaurus construction.

WERSIG, GERNOT
Eine neue Definition von 'Thesaurus'.
Nachrichten fur Dokumentation, vol.20, no.2, April 1969, p.53-62.

Information Processing and Systems

GUNZENHAUSER, RUL, *ed.*
Nicht—numerische Informations—verarbeitung. Beiträge zur Behandlung nichtnumerischer Probleme mit Hilfe von Digitalrechenanlagen. Vienna, Springer-Verlag, 1969.
xx, 509 p.

IRON AND STEEL INSTITUTE
Iron and steel industry profiles; a weekly SDI. London, the Institute, [1969].
39 p.

BURYI-SHMAR'YAN, O. E.
Sistema differentsirovannogo informatsionnogo obsluzhivaniya razrabotchikov NII i KB (po rezul'tatam eksperimental'nogo issledovaniya).
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.2, 1969, p.28-36.
SDI system for research workers and designers.

TINKER, JOHN F.
Comparison of five methods for searching chemical fragments.
Journal of Chemical Documentation, vol.9, no.1, February 1969, p.25-31.
A sorter-collator card deck, a scan column index, a peek-a-boo set, a permuted alphabetical list and a dual dictionary on microfilm were compared.

SCHWARTZ, EUGENE S.
Heuristic retrieval: variable search strategies for identification.
Journal of Chemical Documentation, vol.9, no.1, February 1969, p.39-46.
A heuristic retrieval program for identification is described for a chemical data file.

SCHEELE, MARTIN
Ergebnisse eines Retrievaltestes der Dokumentationsstelle fur Biologie.
Nachrichten fur Dokumentation, vol.20, no.2, April 1969, p.73-80.
Results of a retrieval test on 159,308 titles from biological literature.

Communication and Knowledge

AMERICAN PSYCHOLOGICAL ASSOCIATION. Project on Scientific Information Exchange in Psychology
Reports of the . . . Association's Project . . . vol.3. Washington, DC, the Association, 1969.
261 p., tables, diagrs.
Contains reports APA-PSIEP 16-21.

CAMPBELL, H. C.
Possibilities of international diffusion and documentation of scientific innovations by communication satellites.
International Library Review, vol.1, no.1, January 1969, p.21-34.

Professional Activity

CASE WESTERN RESERVE UNIVERSITY. School of Library Science
A selected bibliography of documentation and information science, Spring 1969. Cleveland, Ohio, the University Center for Documentation and Communication Research, 1969.
[42] p.

FÉDÉRATION INTERNATIONALE DE DOCUMENTATION. Study Committee on Research on Theoretical Basis of Information

On theoretical problems of informatics, edited by A. I. Mikhailov and others. Moscow, All-Union Institute for Scientific and Technical Information, 1969.

191 p., diagrs., bibliog. (FID 435.)

MIKHAILOV, A. I., *and others*

Informatik—eine neue wissenschaftliche Disziplin Gegenstand, Methoden und Beziehungen zu anderen Wissenschaften.

Informatik, vol.16, no.1, p.5-11.

Discusses the new science—Informatics. Definitions are given of some related technical terms, e.g. scientific information, etc.

KHLEBNIKOV, R. A.

Novye zadachi informatiki i rol' uchenykh-referentov.

Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.2, 1969, p.25-7.

New tasks in informatics and the role of the scientist-cum-abstractor.

KOCHEN, MANFRED

Experiments with programmed learning as a new library form.

Journal of Chemical Documentation, vol.9, no.1, February 1969, p.10-16.

SCHULTZ, CLAIRE K., *and* GARWIG, PAUL L.

History of the American Documentation Institute—a sketch.

American Documentation, vol.20, no.2, April 1969, p.152-60.

Chronological development of the Institute, 1937-67, is traced with special reference to the concepts of the founder, Watson Davis.

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TECHNICAL SWEDISH, DANISH, NORWEGIAN translated by J. T. Craddock, B COM, FIL, Ekard, Ray Park Avenue, Maidenhead, Berks. Maidenhead 24931.

RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineering. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

WILFRED E. GOODAY, ARSM, DIC, C.ENG, MIMM, FIL. Member of Translators' Guild, Romanian and French. 161 Rivermead Court, London SW6. RENown 1912.

MEDICAL, PHARMACEUTICAL, BIOLOGICAL translations from French, Romanian and Portuguese into English and from English into French and Romanian. Dr J. Jacobson, 94 Temple Fortune Lane, NW11. 01-455 1010.

TECHNICAL TRANSLATIONS from Russian, German and Polish into English. B. Klipstein, B SC(HONS), 1 Glenview Grove, Shipley, Yorkshire. Tel. Shipley 58215.

TECHNICAL AND COMMERCIAL translations from English into Russian. Mrs. O. Linsley, 31 Parke Road, Barnes, London SW13. Tel. 01-748 8822.

TECHNICAL TRANSLATIONS from Japanese into English. R A. Scutt, BA, 48 Somerset Avenue, West Wimbledon, London SW20. Tel. WIMbledon 1713 (01-946 1713).

RUSSIAN TO ENGLISH TRANSLATIONS. Physical sciences, all industries. Fast service. Ceramics and high temperatures specialities. Kenneth Shaw, c/o CIS Ltd, Churston End, Copythorne Road, Brixham, Devon. Tel. Brixham 3221.

TRANSLATIONS: TECHNICAL, SCIENTIFIC, all west-European languages. J. Smuts, B SC (ENGINEERING), FIL, 12 Thorndene Avenue, London N11. Tel. 01-360 7723.

TECHNICAL OR COMMERCIAL translations into/from English, German, Dutch and French. A. M H Speller, FIL, NGV, 6 Lakeside, West Ealing, London W13. Tel. 01-998 1045.

TECHNICAL TRANSLATIONS in all west European languages. Electronics and other special fields. Camera copy, printing. Peter Suchodolski, FIL (ENG), 70 Greenfield Gardens, London NW2. Tel. 01-458 2239.

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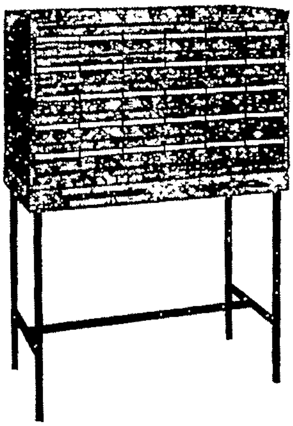

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 21 **August 1969** **Number 8**

ASLIB CALENDAR 1969

September

TUE.9.	Engineering Group. Visit to British Hydromechanics Research Association, Cranfield. 2.30 p.m.
SUN.21–WED.24.	43rd Annual Conference, University of Warwick, Coventry.

October

TUE.21.	Engineering Group. Visit to Constructors John Brown Ltd, CJB House, Eastbourne Terrace, London W2.
WED.22.	Evening Meeting at Aslib. The SCAN system. Speaker: J. C. C. Dicks. 5 p.m. for 5.30 p.m.
TUES.28–THU.30	Aslib/Construction Industry Research and Information Association. Joint Conference. Leamington Spa. 'It pays to be informed.'

November

WED.26.	Evening Meeting at Aslib. The future of scientific and technological journals Speaker: A. A. Smailes. 5 p.m. for 5.30 p.m.

1970

February

WED.25.	Evening meeting at Aslib. Facsimile transmission. Speaker: J. J. Hall. 5 p.m. for 5.30 p.m.

April

THU.23–SAT.25.	Aslib Joint Northern/Midland Branch Conference. Derwentwater Hotel, Portinscale, Keswick.

September

MON.21–WED.23.	Aslib 44th Annual Conference. University of Aberdeen.

Aslib Council 1969–70

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Membership subscription rates

For almost six years, Aslib has contrived to make no general increase in its membership subscription rates in spite of the heavy all-round increases in costs to which it, in common with everybody else, has been subjected. The Council has now had to bow to the inevitable, and for the past six months consideration has been given to various methods of increasing subscription income to enable Aslib's membership services to be maintained, and consolidated where necessary.

Although we are all conscious of steadily rising costs, it is only when the need arises to examine them in detail that we are apt to realize just how steep they have been over this period. The cost of producing the three main Aslib journals, for example—which members receive without further charge—has risen by 150 per cent. Rates and water rates have approximately doubled. Next year, Selective Employment Tax will account for about £3 of every corporate member's subscription. The list is almost endless—telephone, postage, cleaning, heating, national insurance, and so on. It will, therefore, be apparent that subscription income must be substantially increased merely to maintain services at their present level. However, there are in addition certain developments which the Council considers necessary to ensure that those sevices operate at maximum efficiency. These include a limited range of regional liaison facilities —and the decision has already been announced to provide the first of such facilities in the Midlands from the autumn of 1969 onwards—an extension of the existing information and advisory services, a system of technical committees to keep various aspects of information work under review so as to ensure that the services keep in step with members' needs, and a new senior staff appointments service.

In order to achieve this necessary consolidation and to cover the increased operating costs of the last six years, the Government has, as already announced, offered to increase its support for Aslib to £65,000 per annum on condition that subscription income is increased to a similar level. After very careful examination, the Council has concluded that the fairest way to achieve this is to increase certain of the basic rates, and also to introduce a sliding scale related to the number of persons employed in each member establishment. The new rates are as follows:

Industrial Establishments	*Annual Rate*
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For new members joining on or after 1st July 1969, the new rates will apply immediately. For existing members they will take effect from 1st January 1970, or the first date thereafter on which a subscription becomes due. The Council trusts that the introduction of these new rates will make it unnecessary to seek a further increase for a good many years.

Aslib Journals: Non-member Subscription Rates

Member organizations receive one copy *free of charge as part of their membership entitlement* of the three main journals: *Journal of Documentation, Aslib Proceedings* and *Aslib Book List.* Non-members may subscribe to the journals and, in view of the increased costs of producing them since the present rates were introduced in 1964, the annual rates of subscription are being increased as follows from 1st January 1970:

Journal of Documentation	£10 (or 60*s* 0*d* per issue)
Aslib Proceedings	£10 (or 20*s* 0*d* per issue)
Aslib Book List	£ 5 (or 12*s* 6*d* per issue)

Existing non-member subscribers will be invoiced automatically at the new rates for their 1970 issues.

University College, London

Lord Annan, Provost of University College, recently received a deputation from Aslib consisting of Mr D. T. Richnell, Chairman of Council, Mr F. Liebesny, and the Director, to discuss future trends and policies of the School of Librarianship and Archives. The Council of Aslib is concerned that, with the recent appointment of a new Director of the School, in the person of Professor Arthur Brown, an eminent historical bibliographer, there should be no slackening but rather an intensification of interest in information studies, and a growing emphasis on the preparation of librarians with a scientific and industrial orientation, coupled with a stengthening of research work related to this sector. The Provost expressed his sympathetic understanding of Aslib's views and it was agreed that there should be informal consultation from time to time.

Professional education and training

Two important reports on education for librarianship and information work were published towards the end of 1968. They are *On the supply and training of librarians* by the Library Advisory Councils (for England and Wales) and *Education and training for scientific and technological library and information work* prepared by H. Schur and W. L. Saunders under contract to OSTI.

These reports, which raise many considerations for both short-term and long-term improvements in the staffing of libraries and information departments, have been studied by the Aslib Education Committee and Council, and the following observations on the two reports have been presented on behalf of Aslib to the Secretary of State for Education and Science:

'Aslib welcomes the initiative of the Department in setting up investigations which have led to the publication at the end of 1968 of two reports: *On the supply and training of librarians,* by the Library Advisory Councils, and *Education and training for scientific and technological library and information work,* by H. Schur and W. L. Saunders (the Sheffield report). They have brought together and made available much information which will be vital to the planning of professional education in the coming years.

Need for consultation and co-ordination

Aslib particularly welcomes the suggestion (paras. 24 and II 143 of the Library Advisory Councils' report) that a meeting of representatives of all the bodies concerned with professional education should be called to consider the establishment of a standing conference or other machinery with a view to bringing about a comprehensive system of co-ordination. Such a standing conference could provide a focus for the discussion of all developments in education for librarianship and information work. It could, for instance, discuss the steps necessary to ensure that the needs revealed in the Sheffield report are met. It could examine new ideas and recommend the most suitable means for their realization. It could also review the progress made on projects recommended by it and promote further action if necessary. Another matter with which it might concern itself is the establishment of nationally accepted standards—particularly important as the range of professional qualifications and organizations associated with them increases.

Recruitment of graduates

Now that, as the Library Advisory Councils' report shows, the position is being reached where adequate numbers of professional librarians are being produced, it is essential to give greater consideration to the quality and subject backgrounds of the students. In particular, it would seem that the time is ripe for the profession to step up its intake of graduates. As long ago as 1966 the OSTI survey* pointed to the need for more science graduates, and the Sheffield report re-emphasizes this need. A similar need will almost certainly emerge in other fields, such as economics, as and when information services in those fields gain momentum and it is not too soon to start thinking about the needs and potential needs of those other subject fields.

The university schools, with the opportunity which they offer of continuing study for higher degrees, are particularly well placed for attracting graduates of good quality. They are, however, much smaller than the non-university schools and are well below optimum size. It therefore seems advisable, as indicated in both reports, that the university schools should be enabled to expand to the point at which full advantage can be taken of economies of scale, with the accompanying advantage of attracting greater numbers of high-quality graduates into the library and information field.

Scope for research at library schools

The Sheffield report lays stress on the necessity for research into the theory and practice of library and information work to be undertaken at library schools, especially the university schools. This will not only ensure that students can be informed of the latest developments as they occur, but it will also enable students to receive training in research methods, through studying for higher degrees; the possibility of such advanced study should itself be an incentive to attract the best students. Aslib has done much to pioneer the development of research in this field, and would be glad to discuss with representatives of the schools what are the most profitable areas for academic research, and also to consider ways of active co-operation between the schools and Aslib's Research Department.

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* EDWARDS, A. P. J., National Survey of Staff employed on Scientific and Technical Information Work. *Journal of Documentation,* **22**, iii, p. 210–44.

Need for training in teaching methods

Para. II 17 of the Library Advisory Councils' report suggests that courses should be provided to give librarians in establishments of further education an understanding of teaching techniques so that they may be able to instruct students in the use of the library. Such courses would be at least as valuable to all librarians engaged in the part-time teaching of librarianship, and probably to many entering full-time teaching posts as well. Aslib has for many years been concerned at the lack of facilities for training those practising librarians whose recent and current experience is an invaluable part of many short courses, and has, indeed, considered devising its own training scheme. However, it is clearly better that such training should, if possible, be provided by institutions which specialize in education and teaching techniques, and Aslib hopes that some systematic training can be established either at colleges of technical education or elsewhere.

Importance of languages

In paras. II 50–II 53 the Library Advisory Councils' report stresses the importance of a knowledge of languages to librarians. Such knowledge is certainly of the utmost importance in special library and information work, and also in academic libraries. This has not always been sufficiently recognized in the past in librarianship training schemes and requirements, and librarians themselves do not seem to have made particularly extensive use of the facilities for language teaching available in the country. The provision of language classes specially aimed at meeting the needs of librarians might improve this position, but at least ways might be investigated of giving greater encouragement to librarians to extend their linguistic abilities through participation in existing courses.

Part-time training

Both reports recommend that opportunities for part-time training should not be altogether removed and Aslib strongly endorses this recommendation. Full-time education for librarianship is undoubtedly preferable and should be regarded as the normal method of entry to the profession. Nevertheless, in special libraries, particularly in industry, there are—and it is to be hoped that there always will be—people who come into librarianship from other fields, at a time when, for various reasons, they cannot embark on a course of full-time education, but who nevertheless require training beyond what they can get on the job. The Library Association's Mature Registration scheme is designed to meet this need, but it is necessarily limited in its scope and there should be other forms of part-time training, such as evening or day-release courses, available to those unable to benefit from the scheme.

Advanced training and re-training

Initial education, leading to a qualification in librarianship or information science, can no longer be regarded as equipping the budding professional for life. Further periods of training will be necessary, including—for those picked for promotion to positions of responsibility—training in management. 'Staff college' type courses have been shown to be of great value in training for management in other fields. However, the Library Advisory Councils' report rejected the suggestion of setting up a staff college for the library profession and, indeed, it is probable that such courses within the profession would provide insufficient interplay of relevant experience over a wide enough range of situations to justify the experiment. Nevertheless, this type of training would be invaluable for certain people in the higher echelons of library and information work and some means should be sought of enabling more suitable people than at present to take part in staff college courses along with people from a variety of professions.

Provision for practical experience

There are considerable advantages in including in arrangements for professional education periods of training and supervised practical work in libraries before, during and after the period of full-time education. However, with the large numbers of students now in training, many libraries find it difficult to accept students and to provide the standard of training required within the resources permitted by their own budgets. Aslib therefore endorses the suggestion in para. 262 of the Sheffield report that payment should be made to libraries to cover their costs. In the case of industrial libraries, it would seem appropriate that such payments should be made by the Industrial Training Boards and the possibility should be investigated.

Public science and technology libraries

Aslib welcomes the suggestions, made in paras. 142–145 of the Sheffield report, for the development of scientific and technical library services in the public library sector, and considers that support should be given to these.

Flexibility and mobility

Finally, it is important that teachers in library schools should not get out of touch with the profession at large. Useful steps to this end are the occasional employment of specialist lecturers who are engaged full-time in library work, and the secondment of working librarians to teach in schools and of teachers to work in libraries. Such arrangements can be of great benefit to both sides, and ways need to be explored of encouraging a greater degree of mobility between the schools and working libraries and information departments. An effective national scheme for the transfer of pension rights would be one step of great value in making this possible.'

Aslib Electronics Group, 11th Conference, Westcliff-on-Sea, 27th-29th June 1969

The second decade of the Electronics Group Annual Conference was opened by a change of location from Ashridge to Westcliff-on-Sea. If this was a disappointment to any of the sixty who attended their hearts must surely have been warmed by the generous amount of sunshine.

But this was no holiday week-end, for Mr J. Martyn, on the first evening, plunged us mercilessly into the complexities of trying to apply 'cost of effectiveness' methods to library management. It was heartening to learn that no one has yet succeeded—not even the Aslib Research Department which Mr Martyn was representing—in doing this. Nevertheless, it was shown that a proper attitude to mind can be applied to library management and in the discussion practical examples were described.

Saturday began with a progress report on the important and exciting work of INSPEC. Mr T. Aitchison outlined its short history, which includes the successful production by computer of the Science Abstracts publications. He then described the current SDI experiment and the indexing-language investigation which is about to start major trials. Mr P. Clague discussed the SDI results obtained so far. He said they were encouraging but certain observations still required elucidation.

The remainder of Saturday provided three refreshing digressions from information and library work.

The first was an intriguing talk by Mr E. M. Bundy of STC. He showed how electronic codes can be used to provide, quickly and reliably, precise location of faults; unique identification of trains by type, destination, number and position, and more flexible control for the signalman. His talk was supplemented by an entertaining film on railway signalling.

Then Dr A. J. Eatwell, of the British Oxygen Co Ltd., described with admirable clarity some of the secrets of superconductivity, a phenomenon which has fascinated scientist and layman alike since its discovery. Various fields of application have been found, e.g. 'frictionless' suspensions, computer memory elements, bolometers, and high-field electromagnets. At present the low temperatures required prevent the use of superconducting cables for electrical power transmission from being an economic proposition.

The third diversion was the Conference Dinner, which was clearly enjoyed by all the delegates and was excellent.

The Group Chairman, Mrs E M. Codlin, toasted the guests in a highly original, polished and entertaining speech, to which Dr Eatwell, on behalf of his fellow guests, replied appropriately.

Sunday morning's Symposium was very valuable. Although most of the delegates must at some time have sought help from the Ministry of Technology, they were surprised at the vastness of the resouces and services which are available from SRDE, RRE, UKAEA and TIL. The speakers from these establishments were Messrs K. N. Musk, I. C. Graham, J. E. Terry and D. M. Arnold.

In the afternoon Mr Paul-Jones contributed the final paper of the Conference describing the work and publications of BSI.

Once again Mrs W. I. Veasey provided a most interesting display of recent books, which delegates found most helpful.

The Conference Committee is to be congratulated on organizing a most enjoyable week-end, which surely exemplified the advice of the opening speaker: 'Keep your costs low and your effectiveness high'.

From a Correspondent
in the Electronics Group

FID

The Study Committee, Information for Industry (FID/II), has organized a symposium on 'Communication of Scientific and Technical Information for Industry' in Rome for 21st and 22nd October 1969. For further information apply to Mr K. Klintøe, 30 Ørnevej, 2400 Copenhagen NV, Denmark.

New UDC editions

The British Standards Institution announces the publication of the following parts of the full English edition.

(*a*) *Telecommunication services: organization, administration and operation.* BS 1000 (654): 1969. It includes alarm systems and long-distance communication by means of visual and acoustic signals, as well as aspects such as tariffs and payments, personal and service regulations.

(*b*) *Social sciences, law and administration.* BS 1000: 1969. 3/308 *Social sciences, sociology, sociography.* (Includes an introduction to the whole section.)

330	*Economics*
333	*Land and landed property*
334	*Co-operation*
335	*Socialism*
337	*Customs policy*
38/382	*Trade. Commerce.*

Technical Information on Microfilm (TIM)

A new service for engineers in the form of a desk-top retrieval system covering mechanical, electrical, and electronic components, materials and instruments was launched at the end of June by Technical Information on Microfilm Ltd. It uses the very high reduction techniques of the Photo Chromic Micro Image (PCMI) to record over 3,000 pages on an A6 (4 in. by 6 in.) transparency called a Microfile.

Thus a linear reduction ratio of 150 makes it possible to include, at this stage, 250,000 catalogue pages and data sheets on seven transparencies. It is arranged in two parts: the Product Selectors and Data Section, and the Suppliers Information Section. The former groups the information under 200 keywords in alphabetical order. Under each product, group names and addresses of suppliers (in the UK), summaries of relevant British standards and specifications, abridgements of selected patents, lists of trade names, etc., are provided. In the Suppliers Section the catalogue pages are arranged by manufacturer's name. Every six months a new and completely revised set of Microfiles are sent to the subscriber, who can then discard the previous collection. The transparencies are read on a National Cash Register reader which gives a positive image on an 11 in. by 11 in. screen.

The annual rental of the TIM service is £133, which includes the hire of the reader. Further information is obtainable from TIM, Wellington House, 125/130 Strand, London WC2.

IAEA symposium on the handling of nuclear information

The International Atomic Energy Agency is organizing a Symposium in Vienna for the period 16th to 20th February 1970. The proposed programme covers a wide range of documentation problems and includes a presentation and discussion of the International Nuclear Information System (INIS) which the Agency is launching. The nomination of a participant will be accepted only if it is presented by the Government of a Member State of the Agency or by an international organization invited to participate. All those wishing to participate should get in touch with the Ministry of Technology (Mr C. Lathwell), Millbank Tower, SW1.

Committee of Directors of Research Associations (CDRA)

Dr W. F. Watson has become Chairman of CDRA as from 1st June. The Conference of Industrial Research Associations and CDRA have appointed Lord Shannon as the new Director of the Joint CIRA/CDRA Secretariat.

A KWIC for numerical taxonomy

A keyword in context (KWIC) index of some 500 references to the original literature concerning numerical taxonomy, theory and application, has been prepared by Dr H. Maisel (Washington, DC) and Mr L. R. Hill (London) from issues nos. 1–12 inclusive of the newsletter *Taxometrics*. It covers the period 1948–68 and is intended to serve as a handy reference for researchers in taxonomy and related areas.

It is available, price $5.00 USA per copy, from Dr H. Maisel, Computer Center, Georgetown University, 37th and o Sts, N.W., Washington, DC 20007.

The Association of Law Librarians

The first Annual General Meeting of this new Association (see *Aslib Proceedings*, July 1969, p. 257) will be held at the Institute of Advanced Legal Studies, 25 Russell Square, WC1, at 5.30 p.m. on Monday 22nd September.

BRIEF REVIEWS

ARBEITSGEMEINSCHAFT Industrieller Forschungsvereinigungen, 'Otto von Guericke'. AIF Handbuch. 3te Auflage. Cologne, 1968. 376 p.

This handbook consists of two parts essentially: the statutes and history of this confederation of industrial research associations and a detailed description of sixty-six associations. The arrangement is in sixteen broad areas of technology, e.g. mining, power, textiles, plastics, nutrition. A detailed description of each association is given, including address, aims, officials, member firms, staff, etc.

BAKER, G. G. Survey and report on microfilm applications in the motor industry. London, Intereurope Export Publications, 1969. 71 p.

The report, and a survey which preceded it, were originally commissioned by Intereurope Export Publications Limited, for internal use, but the interest aroused was such that it was decided to make the report available to the motor industry. Substantial quantities of paper are used by the industry to distribute, update and supplement information, and the survey identified some of the larger systems which could be more efficient if microfilm were substituted for paper; in many cases the overall operating cost would also be reduced by a change to microfilm. Three microforms were considered—16-mm roll film in cassettes, microfiche, and the National Cash Register PCMI system—and their advantages, disadvantages, costs, and suitability for particular types of document reviewed. For instance, roll film in cassettes is recommended in workshops, microfiche in parts stores and in design and research departments, and roll film in accounts departments and sales areas.

It is concluded that the use of microfilm as a substitute for paper will bring benefits to both the manufacturer and the distributor; the adoption of standardized microforms in preference to proprietary systems is advocated to encourage competition from suppliers of equipment and services. The very detailed data given in this report will make it interesting reading to all users and potential users of microforms, not only in the motor industry.

(Copies of the report are available from Intereurope Export Publications Ltd, 2–4 Queens Drive, London W3, at £5 5*s* each, including postage.)

CAYLESS, C. F., *and* POTTS, H. Bibliography of library automation, 1964–1967. London, British National Bibliography, 1968. 107 p. 28*s*.

Periodicals, reports, and monographs have been covered comprehensively, but not exhaustively, to produce some four hundred references. These are annotated and arranged in a useful classified order, to which alphabetical access is provided by means of a detailed Name Index.

MARKETING and management: a world register of organizations, edited by I. G. ANDERSON in co-operation with the Institute of Marketing. Beckenham, Kent, CBD Research, 1969. £3. (SBN 900246 03 0.)

This directory provides data on over 1,200 professional associations and para-governmental bodies in the field of marketing and management. Government departments and commercial firms are not included. The text is in English, with headings and explanations also in French and German. It is arranged in four sections: the main directory which gives details of international organizations, followed by national organizations arranged alphabetically by country; an index of abbreviations of names of organizations; an index to the titles of publications notified by the organizations; an alphabetical index of all the organizations listed, including, where known, the official translations of their names.

Each main entry consists of the name of the organization, followed by any authorized translation, and unofficial English translation where necessary;

abbreviation; date of formation; a key number indicating the organization's special interests; address, telephone number, and telex number of headquarters or secretary; objects and status; description of activities; membership data; and details of publications.

It is a comprehensive and useful guide to organizations in the field of marketing and management in all parts of the world.

INSTITUTE of Information Scientists. Northern Branch. The value of technical information to national and industrial development in Britain. Liverpool, 1969. 66 p. 6*s* 6*d*. (Obtainable from Mr D. F. Styles, 55 Penrhyn Avenue, Middleton, Manchester.)

These Proceedings of a Conference held in Liverpool in March 1969 (see *Aslib Proceedings*, **21**, iv, p. 149, 1969) includes accounts of the five papers presented as well as the discussions. The main purpose of the Conference was to emphasize the value of technical information to the leaders of British industries.

SAUR, K. G., *comp*. Internationales Bibliotheks-Handbuch, World guide to libraries. 2nd ed. München, Verlag Dokumentation, 1968. (v.1. Europe, v.2 Other continents, v.3 Index.)

As in the first edition, the arrangement is by continents subdivided by countries and then by towns, in alphabetical order. Each entry gives the name and address of the library, its year of establishment, the number of volumes it holds, and its number in this directory. The type of library is indicated by a letter code and its subject field by a numerical code, the keys to which are given in five languages.

The third volume is a subject index, giving the library numbers only, sometimes in unpracticably long lists, as the only subdivision is by country. There is no name index, so the approach has to be either by geographical location or by subject.

Useful for locating a fine arts library in Togo but not a scientific collection in New York.

ASLIB/CIRIA Joint Conference

IT PAYS TO BE INFORMED is the title of a Conference to be held at Manor House Hotel, Leamington Spa, on 29th–30th October 1969, organized jointly by the Aslib Engineering Group and CIRIA. The purpose of the meeting is to explore the benefits that organizations in the construction industry can derive from an effective library/information unit.

The conference is intended primarily for engineers, architects, site supervisors and other users of information in the construction industry rather than for information officers and librarians, who are asked to bring this announcement to the attention of those people in their organizations who would be interested in the theme of the conference.

Accommodation will be limited to eighty participants. Application forms and further information may be obtained from the Conference Organizer, Information Division, CIRIA, 6 Storey's Gate, London SW1.

Mrs G. G. Langstein

Members will be sorry to learn that Mrs Langstein, Technical Librarian at the Power-Gas Corporation, died suddenly in hospital after an accident. Mrs Langstein graduated in economics in Vienna before the second world war, and joined Power-Gas (Ashmore Benson and Pease) in 1941, being responsible for building up a comprehensive technical information service, recently extending into marketing fields. She made many friends in information and elsewhere in industry throughout Europe, and had been associated with Aslib since 1946. Her dynamic presence will be missed at Aslib functions.

MICROFICHING OF PERIODICALS FROM THE USERS' POINT OF VIEW

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Paper presented at a Meeting of the Engineering Group, Thursday 21st November 1968

THE microfiche has become widespread in its use in recent years largely through its standardization by the United States Government for reports. Based on a process invented by J. Goebel in 1939, it owed its rapid development in Europe to the efforts of Dr L. J. van der Wolk, who created the Netherlands Microfiche Foundation. Now that there is some standardization of microfiche size and format, this microform has a much greater chance of success than it did when each manufacturer or publisher produced microfiche to his own sheet size and frame spacing and, in general, to an inadequate standard of quality. The 6 in. by 4 in. COSATI format[1] is a most suitable standard and this agrees with the preferred size in the British Standard[2].

In any microform system three, if not four or five, different organizations are going to be involved, all of whose interests must be safeguarded if the system is to be a success. These organizations are the copyright owner of the material, the original publisher in hard copy form, the microform publisher who produces the microfiche edition, the librarian or professional user who has to buy, store and index it and make it available for the fifth group, the individual users. It is the individual user's views on the suitability of the system, as he sees it, which will determine whether the system will be used or ignored, but, for both professional and individual users, the microfiche offers considerable advantages provided certain definite conditions are met.

Basic requirements

What is it that the user needs and what is it that he wants, these are not necessarily the same? Basically, all a user needs is a legible microcopy and the use of a viewer*. However, if he is to accept the microform as a practical alternative to hard copy, he will want a little more than that.

For consulting abstracts the user would be prepared to go to the library to consult the indexes. It is suggested that the currently provided 16-mm film in cassettes is the most convenient format for microfilming an abstract journal. In these circumstances to select a cassette, place it in a viewer and press the button for the correct page or to follow indexing marks on a scale would not be more difficult than to find the place in the hard copy volume. However, for his reading of periodical articles, particularly those which he has set aside for future reference, the user wants to have the material in which he is interested available immediately wherever he may be and to be able to store it for future reference in a place where he can retrieve it easily. This the microfiche makes possible, provided he has either a personal viewer on loan to him or a viewer readily accessible in his immediate group of colleagues, so that he can consult the article without delay during working hours or can borrow the viewer whenever he has need of it outside those hours. To satisfy this need any viewer for personal use must be portable, that is, capable of being carried in one hand and put into the boot of a car.

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* To avoid the ambiguous term 'reader', the term 'viewer' is used for the equipment and the term 'user' for the person using the equipment.

Together with ready accessibility, an essential requirement is adequate quality; that is, the user must be able to read the projected microform as easily as he would be able to read the original. The question whether the image should be negative or positive is tied up with the type of viewer that is being used. A downward projection viewer will be viewed by reflected light and requires a positive image to give adequate illumination of the screen. This has the advantage that half-tones, which are sometimes very important in the interpretation of a paper, will be shown in an intelligible form. Back projection, in general, requires a negative image so that the background is dark and does not strain the eyes or show undue hot spots. In the last year or so, users have become more tolerant of back projection, which can perhaps be ascribed to the improvement of screen quality and decrease of glare, and perhaps in part to their becoming more used to the idea of reading on a machine. However, at Warren Spring Laboratory the users expressed a very strong preference for reading in their normal position, that is to say, at desk level with the image projected from above. Then they could make notes alongside while reading as they were accustomed to do. Also the image would be at the normal distance and direction for which their spectacles were adjusted, particularly necessary in the case of bifocal lenses.

Quality requirements

The quality of the microfiche is the requirement which, at the moment, is giving the most trouble. For easy reading the standard of the final projected image must be at least 6 lines per millimetre and there is some evidence that an even higher definition than this still increases legibility. At twenty times reduction this means that the microfiche distribution copy must have a definition of at least 120 lines per millimetre. The British standard for microfiche does not emphasize this requirement and to date it has proved impossible to obtain any microfiche of Warren Spring Laboratory journal runs up to this required standard, although some US AEC reports seen have been of adequate quality.

To the suggestion that present quality is inadequate, the objection has been made that engineering drawings have been used with success for a number of years on aperture cards at the present standards. However, to gain adequate definition for an engineering drawing when enlarged from microfilm, firstly, it is only necessary to be able to see whether a line is there or not, and background is deliberately shown to ensure this, and, secondly, the drawings are specially made with print large enough to allow for the degree of reduction desired. The equivalent for a periodical would be to ask the publisher not to print anything in less than 12 point type, especially if it has subscripts. The equivalent of 6 point type with subscripts would be regarded as completely unacceptable in an engineering drawing. In fact, the standards of quality required by libraries are an order of magnitude higher than those required by the drawing office.

Copy microfiches and copyright

In the past, when the user received a recently published journal in which there was an article in which he was very interested and to which he would have liked to make future reference, he would have written to the author requesting a reprint and would have waited for this to arrive. Now, in the majority of cases, he sends the journal to the reproduction services and gets an electrostatic copy. In the case of an active microfiche system he will apply to the library and get a copy microfiche of the article. For this use the published microfiche has to be available as soon as the original hard copy. The cost of producing such a copy microfiche on demand will be considerably less, as is shown later, than that of making an electrostatic copy.

On the question of copyright, the making of a microfiche of a single article in a journal should not be considered any less fair dealing than the making of an electrostatic copy of the same article. Even if two articles happen to be on the same microfiche, the second paper will, from the point of view of the user, in most cases be irrelevant and the copy will thus not be of any detriment to the publisher.

All copy microfiches made in the Warren Spring Laboratory library will be issued in envelopes, printed with

> This copy microfiche was made under the provisions of Section 6 of the Copyright Act, 1956, and is supplied for the use of the recipient only for purposes of research and private study.

Savings in costs and space

The cost of providing microfiches must be set against any savings. As the cost of making a master microfiche is likely to be of the order of £1 to £1 10*s*, and the cost of making each distribution microfiche of the order of 5*s*, the unit cost of producing a microfiche in an edition of, say, fifty will be about 5*s* 6*d*. The selling price of a journal on microfiches, including the copyright fee, may well be the same as, or even down to a half, that of the hard copy edition. Present cameras capable of attaining the requisite quality are slow and expensive, so that the amortization charge to be included in the price of the master is of the same order as that of making the microfiche. If a fast, automatic camera were available, this cost, and the cost of staff time, would be reduced and the cost of a microfiche master could fall as low as 10*s*, which would make even smaller editions than fifty economic.

For the library, there is a cost saving in buying cabinets to store microfiches instead of new bookshelves, and a further cost saving in that binding can be dispensed with. But the biggest cost saving is that of replacing full-sized prints, which at present are made by the thousand and which are not as cheap as the advertisements imply. The accepted view, taken from several authorities, seems to be that an electrostatic print costs between 1*s* and 1*s* 3*d* per page, so that the cost of a copy of an average eight-page paper will be between 8*s* and 10*s*. The cost of making a copy microfiche is of the order of 1*s* 7*d* (material 1*s* 2*d*, staff time 2*d*, overheads 3*d*): with the cost of purchasing a microfiche of the order of 5*s*, plus copyright fee, if only one copy is made in lieu of electrostatic copying, a clear saving is already shown and this could be extended considerably.

In terms of convenience, the individual user can keep all his notes and the copies of articles for reference filed together as a compact card index, while, for the library, journals of different formats are replaced by the uniform-sized microfiches, which simplifies the assessment of space left for future growth.

In most papers on the economics of microfilming the space-saving aspect has been emphasized almost to the exclusion of all others. This may be a very potent argument for a business firm where the actual space used is costly, and is costed to the last square foot, and where changes at short notice are possible. In the case of research establishments one has a space allocation; this may be generous, it may be cramped (it usually is) and it may become impossible. It is only in this last case that the space argument can really be costed because then the cost of an extension to the library can be compared with the cost of installing microforms. Nevertheless, the degree of space saving is considerable, although not as much for large collections as is made out in the advertisements for microfilming. In the Tables 1 and 2, 1 million pages of journal material has been taken as the unit. As shown in Table 1, a number of assumptions have to be made, but these are all within the limits of normal library practice and holdings. In each case the shelves and cabinets are assumed to be comfortably full, and the figures would all have to be increased to allow room for expansion. Several densities of microfilming are shown, and it is suggested that 33 frames full per microfiche on average is the figure to calculate on. Similarly with microfiche storage, two densities are given, four cabinets high (up to 5.5 ft) and three cabinets high (up to 4.375 ft). The first represents the closest practicable storage and the use of library steps to reach the top cabinets; the second would be the maximum useable with ease; if space allowed, it would be comfortable to have cabinets only two high, in which case the space taken would be twice the minimum floor area quoted. With the middle density, the gain by microfilming is approximately 90 per cent space saved.

TABLE 1. *Comparison of space occupied by hard copy and by microfiche*

	Hard copy		*Microfiche*	
		50 frames	*33 frames*	*25 frames*
Unit of quantity [a]	10^6 pp	20,000	30,000	40,000
Shelf space,[b] ft	200	20.8	31.25	41.7
Volume,[c] ft^3	120	3.5	5.2	7.0
Volume as stored,[d] ft^3	180	8.8	13.0	17.5
Minimum floor space, ft^2	71	3.8	5.5	7.4
Average floor space, ft^2	71	5.1	7.3	9.9

(*a*) The unit of hard copy is taken as 1 million pages, photographed at three different densities.
(*b*) Conversion factors are: hard copy, 400 pp. = 1 in., microfiche in envelope, 80 = 1 in.
(*c*) Volume of hard copy is based on an average journal size of 8½ in. by 10 in.
(*d*) Hard copy on shelves; microfiche in cabinets. Shelves are stacked seven high with 3-ft gangways between double stacks. Cabinets (4-drawer, 20 × 16 × 13.5 in.) are on stands 1 ft

high, stacked up to 5.5 ft (four high) with 3-ft gangways between double stacks for maximum storage, but stacked only three high (4.375 ft) for average storage density.

TABLE 2. *Space requirements for microfiche expressed as percentage of requirement for equivalent hard copy*

		Microfiche	
	50 frames	*33 frames*	*25 frames*
Volume	2.9	4.3	5.8
Volume as stored	4.9	7.2	9.7
Minimum floor area	5.4	7.7	10.4
Average floor area	7.2	10.3	14 0

Experience at Warren Spring Laboratory

Every user has some form of prejudice. The student starts off with few and can easily be taught to use microforms as quickly and effectively as normal books. But the older user has become accustomed to, and has formed his reading habits around, the book or paper format. This prejudice must be recognized, met and overcome if microfiches are to be accepted. But if the users are consulted, are asked to express opinions and invited to discuss equipment which is shown to them, they respond with enthusiasm; and although the users will never admit that the microfiche might be a possible or acceptable alternative to the paper hard copy (except in those cases where the hard copy is unobtainable), in fact they will often quite happily accept reports on microfiche and will ask for some of their own records to be microfilmed for convenience in use. When that happens, it can fairly be claimed that the users have accepted microforms.

At Warren Spring Laboratory the first need to do something came up some four years ago when the library was running out of space and there was no chance of having any further building for at least five years. The obvious first solution tried was to discard unwanted material, and to rely on borrowing unstocked items from the National Lending Library on telex requests. Experience shows that 50 per cent of such requests arrive the following morning and this is as good a service as could be expected in retrieving material from an outside store. However, users complained that the material they needed for reference and browsing was no longer on the library shelves. The only alternative was to reduce the bulk of the material stored and, as a number of reports from NASA and other sources were already being received on microfiche, it was clear that whatever solution was chosen, microfiches would be received and would have to be dealt with, so that microfiche seemed to be the inevitable conclusion.

The users were consulted to hear their views on the proposals and a library committee was set up to meet the objections they had raised and to decide the backrun which should be kept for each periodical in the library, a ten-year period being taken as the normal maximum. It was agreed that microfiches for the backruns, after the first heavy usage, would be acceptable provided that caution was exercised. The users required, and were promised, that the hard copy would continue to be available for early consultation. Next, an exhibition was held of the portable microviewers which were available at the time. This was well attended by the staff and eighty-seven copies of a questionnaire were returned completed, in which a request was made for comments on each of the viewers, for a vote of the order of preference, and for a declaration of any prejudice the user might have. These forms were analysed to find which was the most popular viewer and ten viewers were purchased. For about 120 regular users (those who borrow regularly two or more items per month) it is intended eventually to have between fifty and sixty viewers. Only with such a level of equipment can the need be met for a viewer to be on permanent loan to any individual user or be readily accessible to him at all times. In addition, there is a high-quality viewer in the library to deal with very difficult material, together with means of duplicating microfiches and of making enlarged paper copies when necessary. The system has been in use now for about a year and a second batch of ten viewers has been ordered, once again after an exhibition to the users, and as the result of the voting preference shown by completed questionnaires.

It was decided that it would not be economic for Warren Spring Laboratory to set up its own microfiche camera. It would be preferable for the publisher of the hard copy to produce the microform, but various microform publishers already exist and are acceptable sources for microfiche at commercial prices, provided that the quality is adequate. A specification of quality, etc., has been drawn up for this purpose[3] but, as already mentioned, adequate quality has proved difficult to obtain, particularly for definition.

The difficulty is to break out of a vicious circle. Manufacturers cannot produce equipment down to a reasonable price because there is insufficient demand, and there will be no demand of any magnitude until the prices become reasonable. There are signs, however, that the circle, although not yet broken, is at least being enlarged. The number of makers of microfiche equipment is growing enormously, the price is coming down and the quality is rising, and, at the same time, there is considerable interest in the production of cameras and new equipment. If more libraries become interested and are prepared to buy, the trend should be accelerated.

REFERENCES

1 USA FEDERAL COUNCIL FOR SCIENCE AND TECHNOLOGY. *Federal microfiche standards, adopted by Committee on Scientific and Technical Information (COSATI)*. Washington, Office of Science and Technology, 1965 (PB 167630).
2 BRITISH STANDARDS INSTITUTION. *Specification for microfiches.* London, 1967, BS 4187:1967.
3 WARREN SPRING LABORATORY. *A specification for microfiche copies of periodicals.* Stevenage, Herts., 1968.

PRODUCT INFORMATION SERVICES—SOME COMPARISONS

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College of Librarianship Wales
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Paper presented at the 18th Annual Conference, Aeronautical Group, Cranfield, 11th–13th April 1969

ABOUT a year ago at a meeting of English Electric librarians at our Dunchurch Staff Training Centre the problem of the increasing number of firms marketing trade literature retrieval and dissemination systems was raised in the 'any other business'. As there was little time at that stage to discuss the problem in detail, I was asked to produce with some urgency a brief report on the existing situation. It was realized that many in the company, both in libraries and outside them, were being pestered by salesmen with requests to be allowed to demonstrate their product. Although the decentralization of the company meant that any such report could only be a recommending document it was felt by all present at the meeting that it would be extremely helpful in giving the facts as clearly and in an unbiased way as possible. The report was completed in late June and led to the publication of an article based on it in the *Electrical Review*, 20th September 1969[1].

The collection of the relevant information was mainly by acquiring all the relevant promotional literature and by inviting the various firms to demonstrate their equipment. This, of course, they were only too willing to do and one minor problem has been to avoid accepting hospitality from any of them which might have coloured our judgment! On the occasions of the demonstrations various engineers from different parts of the works and laboratories were invited and their questions, plus what we regarded as our rather penetrating inquiries, helped us to gauge the possible usefulness of each system—both in our environment and in other works throughout the company. I should emphasize here that we were not only considering the use of these systems within the library context, since many works which have no library could well find a use for this material.

I first became aware of product information services when Visual Search Microfilm File was demonstrated at Whetstone in early 1967, and at that stage our initial reaction was highly favourable. Here there was, it seemed, the answer to many of our trade literature problems—indeed, some thought this was the end of them. All we needed to do was place an order with VSMF, pay our £1,050 and our troubles were over. This retained impression says much for the smooth, professional selling technique employed and also something for the joy of finding this type of service. It could be we had somewhat of a guilt feeling, because the Central Library had some years before opted out of the trade literature field, merely contenting itself with recording the location of collections on the site. Perhaps we could see an easy way in again without many, many man-hours of effort. Although we in the library decided eventually to wait and see because of financial stringency, some of our colleagues in the Standards field did place an order for the system on the strength of this demonstration. In fact they retained it for a period of one year before eventually, and reluctantly, coming to the conclusion that they could manage more economically with some of the 'hard-copy' systems put out by Technical Indexes, a rival firm. Although I am mainly covering the newer microfilm systems in this paper I feel it is necessary here to mention something of these hard-copy services. Pioneered, as far as I am aware, in the architecture and building field by Barbour Index, this method of centrally collecting, indexing and up-dating trade literature caught on quickly perhaps because having the service involved a regular monthly visit from a mini-skirted and usually attractive young girl. Certainly I think that what may appear to staid (dare I say it) librarians as gimmicky is playing quite a substantial part in this now highly competitive field. The novelty aspect of 'playing around' with microfilm readers and reader/printers, the instant hard-copy and the PCMI microfiche used by Technical Information on Microfilm have done much to capture the interest of the gadget-minded engineer. The more prosaic advantages like saving of space probably only appeals to hard-pressed librarians and information officers.

In hard-copy systems for engineering, Technical Indexes have led the field and they have been very successful in placing them in many parts of the industry. The idea was good and, more important, the price appeared to be right. It was low enough at about £50 per annum to make the placing of a subscription compare very favourably with some journal costs and the order decision was, therefore, usually at a low level. Thus librarians, those who run libraries in industry (you will appreciate the distinction) and often others as well had these installed. Reductions were offered to those who had a set on site and wanted further sets in accessible positions: this made sense particularly to Technical Indexes, whose girl only had to make one visit to service several. The back-up service offered was good too. Any engineer who failed to find the catalogue he wanted could write to Technical Indexes and in most cases he received the information he required very speedily. This also often had the effect of enabling Technical Indexes to persuade the supplier firm to participate in the future. The basic economic structure revolves around the major decision as to whether a manufacturer pays for inclusion of his literature or whether he gets it in free. Technical Indexes, for the hard-copy systems, require manufacturers to pay for inclusion and this enables them to offer the services at around £1 per week. I know that in many areas of the English Electric Company hard-copy systems are regarded as invaluable and are considered to provide value for money despite their known limitations. They have the added advantage of colour. This serious limitation of microfilm systems was pointed out to me by a colleague in a chemical library, who suggested to me in a letter that 'in view of the fact that such literature is deliberately coloured to facilitate comprehension it would seem to me to be an important criticism of the microfilm systems as compared to the hard-copy systems'.

Although 'hard-copy' systems have been of great value to the users, TIM, TI and VSMF seem to have committed themselves completely to microfilm. The rapid development in microfilm technology has much to do with this and with cartridge film and fiche access is, of course, much easier than it was a few years ago. Accessibility brings me to a first point of comparison—from two angles. Firstly, if we have such equipment where do we site it to make sure it is most useful? What kind of controls do we wish to put on it? The case for libraries controlling the equipment seems to me very strong. In the first place their staff are used to this type of equipment and need it for other documentation. Secondly, they can probably save capital expense by using the reader or reader/printer, where suitable, for all uses. Thirdly, they can supervise and control indiscriminate 'printing-out' which if uncontrolled can add greatly to overhead costs. Against this can be set the argument that such equipment must be in the drawing office or at least in the same building as the engineers who wish to use it. Industrial libraries are not always as well sited as they should be and thus there is sometimes a strong feeling that the library is not the most suitable place. It seems to me that TI and VSMF demand close control and some kind of centralization, while TIM is a good deal more suitable for individual offices. Indeed, I tried to back both horses and recommend in my report that, bearing in mind the above points as well as subject coverage, it might be economical and sensible to operate a suitable combination of systems on a large industrial site. On the second point of accessibility to the reader it seems to me that TI has a distinct edge in that its excellent product data books can be consulted before any approach is made to the film store. VSMF involves using the index on the reader and we have found at Whetstone that this considerably lengthened search time on the machine and thus caused queue situations to develop in many instances. In the case of TIM their aim is to provide a system at a price low enough to encourage a proliferation around the offices. If they are successful in their attempts accessibility should present little problem.

There are fundamental differences in format and presentation between TIM and the other two firms. TIM's format is PCMI 6 in. by 4 in. microfiche, each containing some 3,200 pages of data. Both VSMF and Technical Indexes are available on 16-mm microfilm presented as self-threading cartridges or cassettes. Thus TIM takes up the least space, although TI are bringing out new multi-track film which reduces the number of cassettes needed substantially. The point has been raised that 6 by 4 microfiche is easily misplaced (particularly in the uncontrolled drawing office situation?)—lose one and you have lost over 3,000 pages. Cassettes are probably more difficult to lose.

Coverage is very important, and all the companies say they 'aim to cover 100 per cent of UK manufacturers and suppliers' in one way or another. TIM say they will try to cover them all in their index—how many catalogues they will get is difficult to say. Because theirs is a 'pay to get in' system, I understand it has been a slow process to persuade manufacturers and suppliers that it will be money well spent. This has been aggravated, in my opinion, by the inordinately long 'count-down' period—I first saw TIM in February 1968 and it is not available until July 1969—so all comment on it has to be based on what TIM say they will achieve. I must confess to some doubts on this score but the point here is that only £130 is lost if it is unsuitable so that, like the hard-copy systems, it still compares to a journal subscription. Both VSMF and Microdata have a much easier road to follow in their belief that free entry to the supplier is essential for complete coverage. And even this does *not* get everyone in! All the companies are looking around for further information to include and all see standards and specifications as a fruitful further development. Rightly so, I would imagine, in view of the toil and trouble in keeping this type of material up to date. This leads me to up-dating—TIM revises the whole system twice a year; TI every four months for electronic engineering, six months for other sections. Additions are sent in revision cartridges in between times. VSMF revises every four months and the customer is notified of new additions and changes by addendum cartridges—new indexes come every four months. This is in many ways the real heart of things—up-dating is *so* necessary and *such* a chore. It really is quite vital, particularly with standards, to have up-to-date and amended information, and indeed TIM say this is the main reason they have not provided reader/printer equipment up to now (although I understand they are changing their view on this somewhat). Printed-off data may be in someone's desk and then be retrieved later and used; this could be dangerous, say TIM—with our system it can't happen. I personally was quite impressed with TIM's aim of including also some supplementary material such as reviews and descriptive articles alongside what the manufacturers themselves say. This seemed to be a thing worth developing since a built-in critical assessment as well must be useful to a design engineer trying to make a choice between very similar components.

Finally, what does it cost? Well, for anyone with any kind of real trade literature problem even the expensive ones are worth it, I would say. Any calculation on the time spent acquiring, indexing, storing and up-dating this type of material in all its forms and from its thousands of sources must lead to this conclusion. The problem is that many managements either cannot or will not see it this way and, further, will not even see that engineers do waste a frightful amount of time (TI say 15–20 per cent) in seeking out this data. It is a hidden cost in many firms like so much of the information problem. With costs in mind it is necessary to watch overheads even in using these systems. The rental paid is not the end of costs as far as an organization is concerned. Supervision and printing-out, where it is provided for, costs further money. If TI's claims for their new Multidata Reader/Printer are substantiated, then the reduction of print-out costs from approximately 11*d.* to approximately 3*d.* per sheet will revolutionize the economics. Just how good this equipment is I don't know—and as far as I know no independent tests have been done on it. If it is as versatile (35 mm, 16 mm, microfiche, etc., of all types) as TI say, and as cheap in reproducing as they say, they have made a major breakthrough. They look at the moment to be the best buy in many ways. Their experience in hard-copy, their product data books, their competitive price and their coverage all lead me to say this. Competition is stimulating and the keenness of it in this field is undoubtedly helping to bring prices down and thus benefit the consumer. It was disappointing to many to see the Indata SDI system, which looked so promising, collapse but it never really caught on quickly enough. The concept of SDI in product information does seem to aim at a much more restricted field of design engineers than retrieval systems and Indata was perhaps just a little ahead of its time in this country.

In view of this experience I would strongly advise that anyone with a major and well-organized 'home-made' collection does not throw it away just yet. But anyone just starting in this area or anyone who has a badly organized collection should carefully examine the commercial offerings.

REFERENCES

1 KENNINGTON, D., *and* ADAMS, R J. Selecting the right microfilm trade data retrieval system. *Electrical Review,* **183** (20th September) 1968, p. 417–19.

2 WALL, R. A. Trade literature problems. (In two parts) *Engineer,* **225** (15th March) 1968, p. 453–4 *and* **225** (22nd March), 1968, p. 489–91.

EVALUATION OF INFORMATION-HANDLING SYSTEMS

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ONE of life's biggest problems is that of being sure what it is we are talking about. Even if we are sure ourselves what exactly we mean when we talk about something, we very often have no guarantee that our audience is listening about the same thing. At its simplest level this is often a problem of homonymity; the doctor may have a use for plasma, but his use will differ depending on whether he is a doctor of medicine or of physics. At the more troublesome level, it is a matter of interpretation, often affected by emotional predisposition, so that 'justice', for example, means different things depending on whether or not one is in the dock oneself. It is particularly a problem when one is obliged to study something in detail with a view to future application. Before you can do any research into the topic of 'evaluation of information-handling systems' you have to have an exact and unambiguous knowledge of what you mean by a system, what you mean by information-handling, what you mean by information, and what you mean by evaluation, and not only must you have these things defined to your own satisfaction, but you must eventually define them so that everyone else will understand the same things. The usual approach is to sit and think very carefully, make up a definition, look for examples you want included but which your definition excludes, reshape the definition, and so on, in a process of successive approximation. After a while, you usually have a definition which includes either everything or nothing, and you are probably beginning to wonder if you know what you really mean by 'of'. Happily, for our purposes today we do not need to do too much in the way of philosophical gymnastics. The literature is not entirely without definitions of the word 'system', and any one will do for the time being. I used the term 'information-handling' in my title so that I could include libraries, parts of libraries, information departments, commercially available information services and the like. These parts of the title can be left comfortably vague; the thing we are really going to consider is 'evaluation'; and this is the word I must define.

According to Chambers' *Dictionary*, evaluation is defined as 'finding the value of something' and value is defined as 'worth'. This might suggest that a system can be evaluated by determining in some way the maximum amount that somebody is prepared to pay for the privilege of having or of using the system, and indeed this is one method of evaluation which is occasionally used. More usually, the question you have to answer is, 'Is this system or service worth what I am being asked to pay for it?' To answer this question you have to know what the system does, and whether what it does is something you want done; then you have to decide whether the system does the job well enough for you and, if so, whether what it does can be done more cheaply some other way. I am suggesting then that in order to evaluate a system we need to know what the goal or object of the system is, how well it achieves it, and how economically. The 'what' is sometimes called the 'mission statement', and the two 'hows' can be called effectiveness and efficiency respectively. A system is said to be effective if it achieves the goal or goals it has been designed to achieve—if it achieves its intended function—irrespective of the cost or method. It is efficient to the extent that it performs its designated task, irrespective of the value of the task, with the least amount of effort. For instance, if the object of your system is to crack a nut, a steam-hammer is effective, inasmuch as it cracks the nut; but a nutcracker is more efficient.

When a system is designed or implemented, it should be made clear at the outset what the system is intended to achieve, and the aim should be expressed in such detail as to leave no doubt what the criteria of effectiveness will be. Unfortunately, in studying existing systems, there are often three possible sets of criteria. The first is the set of goals the system is intended to achieve, but in many cases these are so ill-defined or so general as to be useless. The second is the set of goals which system users hope it will achieve, and these are likely to vary considerably between users, possibly even being at variance with each other. The third is an arbitrary set defined by the examiners of the system, compiled from a study of users' stated, implied or assumed needs, or by consideration of what the system might possibly achieve, having regard to its configuration and mode of operation (the 'what can we possibly do with this' approach) or a combination of these. It will be evident that the first difficulty encountered in the use of evaluative techniques is that of the choice of appropriate criteria, remembering that whatever criteria are finally chosen they must be firstly measurable in an objective way, and secondly, agreed by the system managers, to be acceptable.

The need for objective measurement raises a great many problems. It might at first seem obvious that if one wishes to find out the value to a group of a particular service one should ask the group. In practice this produces very unreliable results, because it is found that most people experience difficulty in quantifying their opinions in a consistent way—'very good' or 'beta double plus' mean different things to different people—because the basis of judgment is generally different from individual to individual. As an example, if one is attempting to determine the relative usefulness of title-based current awareness devices different attitudes will be expressed depending on whether or not the individual respondents have ever had experience of using such devices, how urgent their needs for current awareness are, and the respective disciplines within which they work. Humans are innately conservative, and when a person says 'I use so-and-so because it is best' (however 'best' may be defined), often his real meaning is 'So-and-so is best because I use it'. This is not to suggest that the system designer should neglect the views and opinions of his users. It should always be remembered that although to some extent use of a system is the result of a logical decision, there are also illogical factors which influence use; a perfect system which nobody uses is of less value than an imperfect one which is used, so if the customer prefers his indexes in upper and lower case it is wise to provide them in that form. The only point I am making here is that for purposes of evaluation, considerable bias inheres in the expressed opinions of a user population.

A study[1, 2] has recently been completed in the United States, by Dr Carl J. Wessel and others, on 'Criteria for evaluating the effectiveness of library operations and services', the object of the study being to identify suitable criteria for evaluation, and develop the appropriate measures relating to the criteria, and methodologies for their determination. The first part consists of a literature search and state-of-the-art review, the second discusses the nature of criteria and suggests areas in which adequate standards for performance are feasible and presents some tentative criteria and proposed management techniques useful in implementing them. The criteria apply to four general aspects of library performance, Philosophical (relating to the statement of the reasons for the library's existence), Management (relating to the influence on the efficiency and effectiveness of the library of management practices), Services and products (relating to the library outputs and measures of service or product effectiveness) and Operations (potentially useful as a basis for performance evaluation of the staff's professional actions). The third part recommends particular criteria and presents methods for their use. I shall not give you all nine criteria listed, but will mention those which are associated with particular techniques of measurement.

Four types of analysis are described. The first is called SCORE Analysis, Service Components Reliability and Efficiency Analysis, and the three criteria to which this technique relates are that effectiveness is a function of the extent to which the library administrator manages his resources to provide the combination of services and products which give optimum support to the library mission and goals, that the effectiveness of a given type of service or product is a function of the probabilities of occurrence of all events essential to meeting the objective or purpose of that service or product, and that the effectiveness of an operation is a function of the probability that essential events occur due to the outputs of that operation. In applying this type of analysis the services which make up the activities of the library under study are separately examined, each being broken into a sequence of events, rather like a procedural flowchart, initiation of each event being conditional on the successful completion of its predecessor. An example given of a search service in which the librarian conducts the search begins with event 1, User contacts librarian, followed by 2, User's need is adequately communicated to allow further processing of need, 3, librarian begins search, 4, some candidate documents are located, and so on. Linking each event are actions, such as 'librarian conducts search' or 'librarian retrieves or orders candidate documents'. During a sample period of time, each time the service is used the librarian records the cost in terms of time spent on each of the linking actions and notes the degree of success of each of the events, so that it is possible to note an average cost of each action, and the probabilities that each of the events will be successfully passed. It is thus possible by summation to arrive at a probability of success of the service and its mean cost; the probability can be considered as an indicator of effectiveness, and the cost as an indicator of efficiency. By modifying the service events or altering the cost elements and taking further sample measurements one can derive further cost-effectiveness measurements, and comparison of the derived measures allows one to decide the value of the modifications, proceeding to gradual optimisation of the service. This technique appears suitable for comparing variations of the same service within a relatively constant environment; it seems unlikely that in its basic form it would allow comparison between services operating in different environments.

SCOUT Analysis (Service Components Utility Analysis) requires in essence the identification of all significant operations performed in the library (performance of searches, cataloguing actions and so on) and an indication of the average existing man-hours per week assigned to each. To each is assigned also a figure representing the existing relative utility of each service in meeting the needs of the users: these base utility measures can be derived in various ways which are described. Expected changes in utility according to changes in assigned man-hours are then allocated. Expected changes in utility according to changes in quantities of materials are also allocated.

Measures of the marginal utility of the components are now calculated, and after some further manipulations the state of equilibrium of the operations performed is examined. The equilibrium condition for maximum utility exists when the total budget is equal to the amount of each operational output multiplied by its unit cost, and the marginal utilities of each product divided by their cost are equivalent. This having been done, if the operations are not in equilibrium one can determine which should be reduced or increased in order to reach equilibrium. This method obviously requires care in its application, particularly in the assignation of the measures of utility; its use is primarily to derive measures of the effectiveness of each service and component within a system.

CORE Analysis (Correlation, Regression and Effectiveness Analysis) relies on information derived from a number of libraries. To give a very simple example, it is found that within a group of libraries a close correlation exists between the number of titles catalogued per week and the cost of cataloguing measured in dollars per week. Within that group, those libraries which deviate most from the line of best fit on the costly side should be investigated to determine if the higher costs are justified, and those deviating on the low side should be investigated to determine if the quality of cataloguing should be higher. This is basically a means of setting standards of performance and, being based on inputs and outputs only, is independent of the methods actually used for operations.

GAME Analysis (Group Attainment and Methods Analysis) is a technique for developing standard methods and standard times or costs for accomplishing desired outputs. I shall not describe the technique in detail; it is a management technique involving systematic analysis of work to eliminate unnecessary work, arrange the remaining work in the best order, standardize work methods and develop time standards for the work performed.

I have not given any detail of the foregoing techniques, partly because they are fully reported elsewhere and partly because after lunch on a Sunday afternoon might not be the very best time to go too deeply into the complexities of anything. I would strongly recommend that if you are interested in evaluation you devote some time to the three reports issued by Dr. Wessel and his associates. They contain some of the most thoughtful, careful and practical work yet done on this difficult topic.

An equally interesting approach is that currently being developed by the Institute for Advancement of Medical Communication[3, 4, 5], under the leadership of Dr Richard H. Orr. As with Wessel's work, the object of the Institute project is to develop methodology; specifically 'to develop methods for collecting objective data suitable for planning and guiding local, regional and national programs to improve biomedical libraries and the biomedical information complex'. Among the general desiderata affecting the measures to be developed—such as reproducibility, wide applicability and comparability—one in particular deserves special mention. It is desired that the methods developed 'should be practical—costs should be reasonable, and execution should not seriously interfere with a library's regular operations, nor be burdensome to its clientele'. This in effect means that the librarian wishing to use a given method should not be expected to have to engage in a really major data-collection effort. Vickery[6], reviewing a recent analytical approach to the problems of obsolescence and scattering, pointed out that application of the derived formulae necessitated measurement of twenty parameters, ranging in complexity from number of journal items in stock, through number of journal titles requested per year, to average storage cost per volume per year: in cases of this nature the librarian must be assured that the possible benefits accruing from use of such a measure justify the expense and effort of gathering the input data.

The work so far reported on by members of the medical Institute's project staff includes a Document Delivery test, a test of Interlibrary Loan Service, a means of collecting inventories of Library Services and some tests of Capability for Basic Reference Services. The Document Delivery test is based on a random sample of documents cited by biomedical researchers. A professional librarian, simulating a user, searches the collection of the test library for each item in the sample, noting the availability of each item at the time of test. Each possible outcome of a search is expressed in terms of 'delivery time', that is, how long a user would have to wait to obtain the item, and the results are then used to calculate a Capability Index, ranging from 100—all items available on shelf—to 0—nothing available in less than a week. The test of Interlibrary Loan Service is analogous. Both tests have been validated by application to a number of libraries. Inventories of Library Services are considered to be of use for a number of purposes, including the facilitation of comparisons between different libraries, clarification of library policies, indicating problem areas in library policies, and indicating areas of non-correspondence between librarians' and users' views of what the library under study is expected to do. The basis of the technique is a lengthy interview structured in a branching manner not unlike a systems analysis flowchart. The two tests of Capability for Basic Reference Services are firstly, a test of individual citation-verification ability, based on a test sample of fifty faulty citations, very similar in style to a standard aptitude test and administered to individual members of the library's staff; secondly, a similar test of the ability to answer questions of simple fact the answers to which are not available from a single secondary source.

The successful use of these methods depends on the existence of a battery of test material suitable for application to all or most of the libraries in the group whose performance is to be analysed. This implies a high degree of homogeneity within the group. The methodology is sound and of general applicability, but clearly examination of a library in a different field entails collection of a different, appropriate body of test material. This probably means that in using this methodology the more specialized the library under test the higher is the cost of testing, since the same body of material is unlikely to be applicable to more than a very small number of other libraries.

At a different level of evaluation, concentrating specifically on efficiency—that is to say, doing whatever it is you want to do in the most economic manner—we find various applications of standard management techniques, such as for example the use of flow process charts, block diagrams, and decision flow charts[7]. The general approach is as follows. Firstly, a particular routine which merits study is selected. Then every step in the routine is charted. Then the routine is examined to see whether any of the steps can be eliminated, whether the sequence is the most useful, whether any steps can be combined, whether the same routine or any parts of it are done elsewhere in the library, whether delays can be eliminated, whether a person of lesser skills or lower grade could do the job as well, and so on. This seems, of course, the most obvious common sense, and indeed it is, but unfortunately the 'common' in common sense is about as meaningful as the 'vulgar' in vulgar fractions. An example of this technique in action is to be found in *Productivity Now* by Butterworth[8]. The acquisition procedures of two university libraries were examined. I shall not repeat the whole study, but the following bit of routine was typical of both libraries' operations. Books received in one library, after a routine which checked everything on the invoice except the price (and then passed the invoice to the bursar, who checked it all again anyway—except the price), were given to two senior cataloguers, who passed them on to their four subordinates. The bibliographical details were then assembled and checked (as they had already been on the original request form, which had been discarded). Then the books were classified and catalogued, and the cataloguing subsequently checked against BNB; if the classification differed, BNB was assumed to be at fault. The senior cataloguers then checked their subordinates' work. In total the output per head of these six professionals was five books per day, and they did nothing else but catalogue. In other parts of the routine, all the paperwork of ordering was gone through before the catalogue was checked to see whether the required book was already in stock or not. Various ledgers such as a 'Library Purchases Register' and 'Departmental Order Record' were kept, although they had no function whatsoever. The same information was recorded separately a number of times, and the same job done again at various stages of the routine. As Butterworth points out, this sort of picture 'draws the reader's attention to the fallacy of presuming that industrious, intelligent and even dedicated people will eliminate wasteful effort so that they can concentrate on the creative aspect of their work'.

Butterworth used an ordinary flow process chart technique to diagram the processes I have mentioned, and the data was gathered by observation and questioning of the staff engaged in the performance of the tasks being studied.

It is important in doing this sort of study to be clear what it is you are charting, either the activities of a person or the operations performed on a product. In the case I have mentioned what was charted was the operations performed on a product, in this case a book order. Standard symbology was used to represent an operation, transportation, storage, delay and inspection.

You are doubtless all familiar with the decision flowcharts associated with the diagrammatic representation of computer routines. These are not too dissimilar to the flow process chart, although the symbols used differ. The main difference is that a decision flowchart incorporates a symbol indicating the point at which a 'yes-no' decision occurs. The flow process chart is used for describing work when the operator adheres to a prescribed routine for each cycle; the decision flowchart is best used in analysing complicated workflows requiring numerous decisions. A decision flowchart can be used to diagram a set of routines in the same way as a flow process chart, for subsequent examination and judgment of the quality of the routines diagrammed, but it can also be used to give some information about the cost of alternative actions. Imagine a set of diagrammed routines in which there are two sorts of symbol, one for actions and the other for binary choices. The actions, as in the previous sort of chart, are simple acts such as 'assign accession number' or 'stamp top copy', and the choices are simple yes-no decisions such as 'Is the book in English?' or 'Already in stock?' By observation or by the use of standard times, costs in terms of personnel time can be assigned to the actions, and by observation again, or subjectively, probabilities of occurrence of either of the two paths leading from a choice can be assigned. Then by summing down each path through the diagram in turn the costs of each path can be obtained, and in a similar way the probabilities can be summed to give the probability of occurrence of each path. In this way not only can points within the routine set of greatest cost be identified, and points where system modification would be of greatest effect, but also hypothesised alternate routines can be realistically compared with an existing set of routines.

It may seem that we have strayed from system evaluation into system design, but the two activities are frequently joined of necessity since in the majority of cases the object of evaluating a system is so that data may be gathered for its improvement. Often system evaluation is undertaken as a preliminary to the possible introduction of some degree of mechanization or automation—indeed, one of the major advantages of considering mechanization of a system is that it enforces a close and objective examination of what the system is really doing. Not infrequently systems are found to have grown gradually through the years on an *ad hoc* basis, and what has resulted is an aggregation of expedients and tradition; this sort of situation, incidentally, tends to be resistant to both examination and change.

On the face of it, it might seem that the easiest way of quickly evaluating a service is to make a charge for it. However, as Lancaster[9] points out, not all services can levy charges and, moreover, the fact that someone continues to pay a given sum for a particular service is an indication that he considers the service worth at least the amount of his subscription, but is no guide to its actual value in terms of time savings or other tangible factors. Practically, the payment of a subscription is a possible indication that the service is effective in so far as it is better than nothing, but does not indicate either that it is operating at maximum effectiveness or that its mode of operation is potentially the most efficient.

Similarly, determining the cost of obtaining the same end-product as the service offers if the service itself did not exist, and comparing this with the cost of running the service, is not a very good means of measuring efficiency for the same reason. It is also virtually impossible to do, since, if the service being tested did not exist, response to information demands might be met in a variety of ways, either by doing a literature search or some other information-acquisition ritual, by performing a series of experiments or even by doing without the required information at all. The information produced by the service in response to a demand is likely to be qualitatively different as well as quantitatively different from that produced by other means. It is also likely that the demands put to the service differ from those which might be made in its absence.

This is tantamount to saying that in attempting to measure the effectiveness of a system it must be considered in relation to its environment. In fact it might be better to consider an information system as being the interaction between a collection of services and a user population. At the library level, this means assessing the extent to which each set of routines contributes to the successful operation of the library as a whole. At the organizational level, it means assessing the extent to which the information department contributes to the economic and successful operation of the organization. At the national level, it means attempting to assess the extent to which the whole collection of information activities carried on within a country, and those to which the country has access, contribute to the national economy and the social welfare of its inhabitants.

REFERENCES

1 WESSEL, C. J., *and* COHRSSEN, B A. *Criteria for evaluating the effectiveness of library operations and services. Phase* 1. *Literature search and state of the art.* ATLIS report no. 10. February 1967. DDC Document AD 649468. WESSEL, C J, MOORE, K L., *and* COHRSSEN, B. A. *Phase* 2. *Data gathering and evaluation.* ATLIS report no. 19 WESSEL, C J., *and* MOORE, K. L. *Phase* 3. *Recommended criteria and methods for their utilization.* ATLIS report no. 21. January 1969.

2 WESSEL, C J. Criteria for evaluating technical library effectiveness. *Aslib Proceedings*, 20, 11, 1968, p. 455–81.

3 ORR, RICHARD H., *et al.* Development of methodologic tools for planning and managing library services Part I. Project Goals and Approach. *Bull. Med. Lib. Ass.*, 56, July 1968, p. 235–40.

4 Ibid., Part II. Measuring a library's capability for providing documents. *Bull. Med. Lib. Ass.*, 56, July 1968, p. 241–67.

5 PIZER, I H., *and* CAIN, A.M. Objective tests of library performance. *Special libraries*, 59, 9, November 1968, p. 704–11.

6 VICKERY, B C. Review in *L.A. Record*, 71, 2, February 1969, p. 55–6.

7 DOUGHERTY, R. M., *and* HEINRITZ, F. J. *Scientific management of library operations.* Metuchen, N J., Scarecrow Press, 1966.

8 BUTTERWORTH, J. *Productivity now* Oxford, Pergamon Press, 1969.

9 LANCASTER, F. W. *Information retrieval systems.* New York, Wiley, 1968.

LIBRARY AND INFORMATION SCIENCE ABSTRACTS:

A BRIEF PROGRESS REPORT

ALAN GILCHRIST

Aslib

DURING 1968 Aslib and the Library Association agreed to collaborate in the production of a new abstracts service, starting in 1969, to cover their combined areas of interest. Two issues of *Library and Information Science Abstracts* have now appeared and though this brief note of progress may appear somewhat premature it is the intention of the *LISA* editor and his Advisory Committee to maintain a critical watch on the performance of *LISA*. Such an attitude is a proper continuation of two reports[1, 2] which examined abstracting services in documentation and library science, and *Library Science Abstracts* in particular, and which laid the foundation for *LISA*. A full account of the events leading to the publication of *LISA*, including attempts to collaborate with *Referativnyi Zhurnal* and *Documentation Abstracts* (renamed *Information Science Abstracts* in the March 1969 issue), appeared earlier this year[3]. The initial intention behind the analysis of only two issues of *LISA* was to provide a comparison with various figures of throughput predicted during planning. A good correspondence was found; for example, the predicted total for 1969 of 2,489 abstracts is only slightly higher than the figure of 2,379 extrapolated from the first two issues. However, users of the service will be interested in actual performance rather than predictions.

The first two issues provided 793 abstracts, of which 311 were foreign language and an overlapping 159 were of monographic material; 416 abstracts came from the Library Association and 377 from Aslib. An important feature of the new system is the high degree of in-house abstracting and the presence of a full-time editor working at the Library Association. Table 1 shows a breakdown of abstracts by abstractor for both *LISA* and *ISA*. The VINITI system provides total in-house abstracting.

Six hundred and thirty-four abstracts of journal articles appeared in the first two issues. The potential source for journal abstracts is nearly 350 titles taken by the two libraries, enhanced by regular scanning of fringe titles, and occasional offprints and reprints sent in voluntarily by members. Thought has been given to the possible formalization of this last source which is particularly valuable for certain types of material. The most useful parameters by which abstracts services may be compared are scope, coverage and time-lag. The final issues of respective volumes will publish lists of journal titles covered and it will then be possible to compare these lists and the subject areas covered. One method used in the past[1] is to find a bibliography of items that one would expect to be covered by the services being examined, but which is independent of them and to check what proportion of the bibliography has been abstracted by each. This technique may be used later when matching becomes possible.

LISA is published six times a year and it is a fundamental principle of this new service to keep to a minimum the time between date of receipt of original and publication of abstract. The target time suggested by the Advisory Committee was three months, but in practice this varies between about seven and sixteen weeks, depending on the critical bi-monthly date when copy goes to the printer. In Table 2, twenty titles selected at random from the March 1969 issue of *Information Science Abstracts* are matched against a notional publication date in *LISA* (based on the target time described in the preceding paragraph and so far achieved).

Analysis and evaluation of subsequent issues will be maintained and a fuller account will appear at a later date of the performance and characteristics of the first volume of *LISA*.

Table 1

LISA				*ISA*
318 (40.1 per cent)	491 (61.9 per cent)	Aslib	in-house	
173 (21.8 per cent)		Library Association		
199 (25.1 per cent)		Outside panels		170 (32.7 per cent)
103 (13.0 per cent)		Author		205 (39.4 per cent)
		Other abstracts services		145*(27.9 per cent)
793				520

*125 (23.0 per cent) from the old *Library Science Abstracts*.

Table 2

Twenty journal items selected at random from the March 1969 issue of *Information Science Abstracts*. The 'notional *LISA* date' in column 5 is based on the figures previously mentioned of seven–sixteen weeks between receipt of original (or manuscripts for Aslib and Library Association journals) and date of appearance of abstract.

Title	*Date of issue*	*Nationality*	*Date of receipt by Aslib library*	*Notional LISA date*	*Publication difference in months*
ALA Bull.	Dec. 67	US	12 Jan. 68	Mar. 68	12
Am. Docum.	Apr. 65	US	8 Jun. 65	Jul. 65	46
Ann. Libr. Sci.	Jun. 67	India	19 Mar. 68	May 68	10
Aust. Lib. J.	Dec. 67	Australia	1 Feb. 68	Mar. 68	12
Bibliotekar	May 67	USSR	31 May 67	Jul. 67	22
Biblioteki SSSR	Oct. 66	USSR	8 Feb. 67	Mar. 67	24
Coll. Res. Libr.	Mar. 68	US	6 May 68	Jul. 68	8
Indexer	Spring 68	UK	19 Aug. 68	Nov. 68	4
Inf. Scientist	Jul. 67	UK	17 Apr. 68	May 68	10
J. Docum.	Jun. 68	UK	18 Jun. 68	Jul. 68	8
Libr. Ass. Rec.	Jan. 68	UK	15 Jan. 68	Mar. 68	12
Libr. J.	Jul. 68	US	15 Aug. 68	Nov. 68	4

Title	*Date of issue*	*Nationality*	*Date of receipt by Aslib library*	*Notional LISA date*	*Publication difference in months*
Libr. Resour Tech. Serv.	Winter 68	US	13 May 68	Jul. 68	8
Libr. Sci. Slant. Docum.	Dec. 65	India	2 Mar. 66	May 66	34
Meth. Inf. Med.	Oct. 68	Germany	8 Oct. 68	Nov. 68	4
Nachr. Dokum.	Jun./Jul. 68	Germany	9 Aug. 68	Nov. 68	4
Nauch-Tekn. Inf.	(4) 68	USSR	7 Jun. 68	Jul. 68	8
Probl. Docum. Inf.	Jul. 68	Roumania	8 Oct. 68	Nov. 68	4
Program	Jan. 68	UK	4 Apr. 68	May 68	10
UNESCO Bull. Libr.	May/Jun. 67	International	24 May 67	Jul. 67	22

The average difference in time-lag is 13.3 months. Of the twenty items selected from *Information Science Abstracts,* eleven had been taken from *Library Science Abstracts,* six were author abstracts and three had been prepared by panel abstractors.

REFERENCES

1 GILCHRIST, ALAN. Documentation of documentation: a survey of leading abstracts services in documentation and an identification of key journals, *Aslib Proceedings,* **18**, iii, 1966, p. 62–80.
2 LIBRARY ASSOCIATION. Reference, Special and Information Section. Research Sub-committee. An assessment of *Library Science Abstracts,* 1966. 7 p. (Not published).
3 EDWARDS, TOM. *Library and Information Science Abstracts:* a new service for librarians and documentalists, *Library Association Record,* **71**, ii, 1969, p. 41–3.

Letters to the Editor

Dear Sir,

CITATION PRACTICE

Now that citation indexing has become a valuable and integral part of the computerized systems by which we gain access both to archival and to research-front literature, the editorial practices regarding citations may need re-examination. Such things used to be rather arbitrary matters of taste and convention; now, with this new use, they should be treated as are the titles of the articles published. Over the past few decades we have come to prefer titles that contain several useful descriptors of the content, so that the work may be noticed adequately by those who use key-words, permuted title indexes and pages of contents. In just the same way as we prefer not to use titles carrying little description, we should avoid any attitude to citations that takes no advantage of this facility.

In the past we used citations as a means of giving credit to previous researchers, of noting authority for statements and data not part of the conventional wisdom, and even for historical piety or learned decoration. Today, if we cite another work we also say in effect, *'If you were interested for any reason in that previous work, you may also have some interest in this new contribution which is in some way based upon it'.*

A paper that carries no such citations is in effect divorcing itself from cumulative scholarship in that area; a paper padded with too many that are largely decorative creates random noise in which it may get lost. Editors and their referees should therefore help their authors and readers by encouraging authors to cite work strongly related to their contributions. This is especially important in technological journals and in articles for the general reader where hitherto citations were often customarily avoided. Three or four citations, preferably given as end-notes, would often be quite sufficient for good use; one is very much better than none at all. Please help by regarding the absence of citations as being just as odd as the absence of a paper title or the absence of an author's name.

Yours sincerely,
DEREK J. DE SOLLA PRICE,
Avalon Professor of the
History of Science, Yale University.

Dear Sir,

DEVELOPMENT OF BS 1000

Mr J. E. Wright's call (*Aslib Proceedings,* 21, 5, 1969, p. 200) for 'a much simpler practical guide to the way to use the UDC' is bound to secure a fair measure of support. However, the underlying assumption, namely that BS 1000 C is only for the more sophisticated user, is fallacious. A study of the booklet soon shows that the deficiencies are more prevalent in the schedules than in the guide.

Page 27 states 'sometimes a schedule will mix up different facets somewhat...' (the schedule for 625.7/.8 is quoted). 'The classifier who has digested the essential theoretical points earlier on should have little difficulty in recognizing the following points:

625.72 and 625.75/.77 are operations

625.73/.74 are parts . . .', etc.

Once these facets have been recognized 'practical classification can now proceed with a clear awareness of the possible citation orders'.

The identification of facets is probably not as simple as Mr Mills suggests; but it is altogether a different proposition to suggest either that Mr Mills' explanation is inadequate or that some users of the UDC do not need to carry out this exercise. The explanation of what to do about mixed-up facets is only necessary because:

(*a*) the schedules do not clearly reveal their underlying structure;

(*b*) the schedules are unsatisfactory.

In view of the fact that a substantial number of librarians have an adequate knowledge of 'modern' classification principles, the revision of the schedules to make the application of BS 1000 C to them easier should take precedence over the production of a simpler guide.

In carrying out the second stage of the programme outlined in Mr Wright's paper, revision committees should determine the scope and organization of each section and the characteristics of division used to organize subdivisions. This information could then be used as a guide in restructuring the schedules and incorporated in future editions of the classification. If this procedure is not adopted publicity campaigns and simpler booklets will not produce a favourable response either from existing or potential users.

Yours faithfully,

M. J. ROBERTS,
Senior Research Officer,
Brixton School of Building.

26th June 1969.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

*Items are available in the Aslib Library and may be borrowed unless marked * to indicate reference copies.*

User Studies

WOOD, DAVID N., *and* BOWER, CATHRYN A.
Survey of medical literature borrowed from the National Lending Library for Science and Technology.
Bulletin of the Medical Library Association, vol.57, no 1, January 1969, p.47–63.
Survey by the NLL shows that industrial organizations and universities accounted for 62 per cent of the loans.

CRUM, NORMAN J.
The Librarian-customer relationship. Dynamics of filling requests for information.
Special Libraries, vol.60, no.5, May–June 1969, p 269–77.

MEYER, GUNTHER
Zur Methodik der Analyse von Benutzungsanforderungen.
Zentralblatt fur Bibliothekswesen, vol.83, no.4, April 1969, p 204–16
Examination of the relation between demand and acquisition policies by analysing readers' requests Suggestions for statistical programmes for investigations.

Library Systems

BURGESS, MOIRA, *ed*
Scottish libraries 1966–1968. a triennial review. Glasgow, Scottish Library Association, 1969. SBN 900649 20 8 60 p., illus

MILLEN, R. J.
The National Reference Library of Science and Invention
Bulletin of the Circle of State Librarians, vol.17, no 2, May 1969, p 21–3
Description of the Holborn Division (formerly the Patent Office Library) and the Bayswater Division Reading Room

SHARR, F A
1968 in Australian libraries
International Library Review, vol.1, no.2, April 1969, p 229–34.
Opening of the new National Library building, entry of the Commonwealth Government into the field of school libraries, adoption by the Library Association of Australia of a revised policy on professional education

FISCHER, G. L.
Archival development in South Australia.
Australian Library Journal, vol.18, no.3, April 1969, p.69–79

PFOUTZ, DANIEL R.
PENNTAP
Library Journal, vol.94, no.8, 15 April 1969, p.1589–91.
Carnegie Library of Pittsburgh's PENNTAP van, a mobile research library alerting small industry to technical information.

TRAINAR, PIERRE
La section médecine et pharmacie de la bibliothèque universitaire de Grenoble.
Bulletin des Bibliothèques de France, vol.14, no.4, April 1969, p.151–6.
The medical and pharmaceutical departments of the University of Grenoble library at Saint Martin d'Hères.

KRAVTCHENKO, SUZANNE
La section droit-lettres de la bibliothèque universitaire de Grenoble Saint Martin d'Hères.
Bulletin des Bibliothèques de France, vol 14, no 4, April 1969, p 131–8.
The Law-Letters Section of the University Library of Grenoble at Saint Martin d'Hères.

CHAUVEINC, MARC
La section sciences de la bibliothèque universitaire de Saint Martin d'Hères.
Bulletin des Bibliothèques de France, vol.14, no.4, April 1969, p.139–49
The science department of the University of Grenoble library at Saint Martin d'Hères

STRAIN, PAULA M.
The industrial librarian as co-operator.
Special Libraries, vol.60, no.4, April 1969, p.209–14
Co-operation between industrial libraries and public, special and university libraries. Future areas of development are indicated.

Administration and Management

THE EILEEN and Kenneth T. Norris medical library. University of Southern California
California Librarian, vol.30, no 2, April 1969, p.80–4.
Illustrations and brief description of new library buildings.

CLEVENGER, SARAH
Countercurrent distribution for making committee decisions.
Nature, vol.222, 7 June 1969, p 932–3.
Modification of Benzer's method originally applied to fruit flies can be used by libraries for the selection of important books.

ROBINSON, F., *and others*
Systems analysis in libraries, by F. Robinson, C. R. Clough, D. S Hamilton and R. Winter [of ICI]. Newcastle upon Tyne, Oriel Press, 1969. SBN (69 UK) 85362 064 4.
55 p., illus. (Symplegades No. 2.)

WESSEL, C. J., *and* MOORE, K. L.
Criteria for evaluating the effectiveness of library operations and services. Phase III. Recommended criteria and methods for their utilization. Washington, DC, John I. Thompson Co., 1969.
viii, 93 p., illus. (ATLIS report no. 21.)

MEISTER, HANS-JOACHIM
Zu einigen Fragen der Sicherung von Bibliotheksbestanden.
Zentralblatt fur Bibliothekswesen, vol 83, no.4, April 1969, p.193–204.
Survey of protection of books against fire, theft, water, etc.

LE TRANSPORT des documents
Bulletin de CIMAB supplement, May 1969, p.1–100.
Problems and methods of transporting documents, mechanical and compressed-air methods.

Printing and Publishing

HAZELL, W.
Cogency in technical writing.
Technical Publications, vol 5, no.10, June 1969, p.437–50.

ROBERTS, D. C.
Abbreviation of journal titles.
British Medical Journal, vol.2, 19 April 1969, p.185–6.

LAUGHTON, DOUG
Trends in bookbinding
Graphic Arts Progress, vol.16, no.3, March 1969, p.3–9.
The various processes in bookbinding are examined in light of the recent developments from a hand-oriented craft into a system with high-speed machinery.

GORIKOVA, V. L., *and* MELLION, S. P
Distributia articolelor în publicatiile periodice şi seriale din domeniul electrotehnicii şi energeticii.
Probleme de Informare şi Documentare, vol.3, no.4, April 1969, p.189–93.
Distribution of papers on electrotechnology and electronics in periodical and serial publications.

GHEDRIHOVICI, G. V.
Dispersarea articolelor din domeniul metalurgiei în literatura mondială de periodice.
Probleme de Informare şi Documentare, vol.3, no.4, April 1969, p.181–8.
Distribution of papers on metallurgy in world periodicals.

HANSON, PETER P.
Abstract journals in photography.
Sci-Tech News, vol.23, no.2, Summer 1969, p.18–9.
Brief notes, and table of the 25 journals most frequently cited by photographic abstracts.

WHALE, R. F.
Comment on copyright; foreword by Sir Alan Herbert. London, British Copyright Council, 1969.
22 p

COMMITTEE of experts on translators' rights. Paris, 23–27 September 1968. *Copyright Bulletin*, vol.2, no 4 1968, p.3–17. Meeting at Unesco HQ, Paris.

Reprography

HARRIS, P. S.
Purchasing specification for microfiches. Stevenage, Warren Spring Laboratory, 1969. SBN 900 790 27.
7 p., illus.

ELECTROSTATIC copiers.
Business Equipment Digest, vol 9, no.6, June 1969, p.48–56.
Copiers at present on the UK market

BAKER, G. G.
Survey and report on microfilm applications in the motor industry. London, Intereurope Export Publications, 1969.
71 p , illus

SMITZER, L. A
Looking ahead in microfilm and information retrieval.
NMA Journal, vol.2, no 3, Spring 1969, p.77–82.
Camera and recording methods, processing, printing, readers.

HULST, J. VER
An approach to the development of a large volume microform dissemination library system.
NMA Journal, vol.2, no.3, Spring 1969, p.111–12.
An integrated high/low density system which could offer cost advantages of 10 to 1 over a 20 × microfiche system and at least 2 to 1 over a 60 × microfiche system.

TOMLIN, RICHARD I , *and* BRUNNER, R. GORDON
A total information concept: rapid retrieval of microfilmed documents using an

optical coincidence system.
NMA Journal, vol.2, no.3, Spring 1969, p.102–4.

GUIDELINES of job descriptions for the micrographics industry.
NMA Journal, vol.2, no.1, Fall 1968, p.29–36.
A research study, suggesting titles and functions for a microfilm operation on a reasonably large scale.

Subject Organization

WILLS, GORDON, *ed.*
Sources of UK marketing information, compiled by Gordon Wills . . . University of Bradford . . . sponsored by the Market Research Society. London, Nelson, 1969. SBN 17 155038 2.
304 p.

CHRISTIANSON, ELIN B.
Information retrieval for advertising and marketing research.
Special Libraries, vol.60, no.4, April 1969, p.219–22.
The J. Walter Thompson Co., Chicago, has developed an information system, applying deep indexing, concept co-ordination and Termatrex to the retrieval of information in research reports.

BURMAN, C. R.
Bibliography and documentation of chemistry and applied chemistry.
International Library Review, vol.1, no.2, April 1969, p.263–76.

WOOLSTON, JOHN E.
The International Nuclear Information System (INIS).
Unesco Bulletin for Libraries, vol.23, no.3, May–June 1969, p.135–8.

ERDÉLYI, GYORGY
Uton a jármuipar gazdaságos tájékoztatása felé.
Tudományos és Muszaki Tájékoztatás, vol.16, no.4, April 1969, p.271–8.
New methods in an information system in the field of motor vehicle and transportation industries.

UNESCO's co-operative educational abstracting service (CEAS).
Bibliography, Documentation, Terminology, vol.9, no.3, May 1969, p.98–118.
The abstracts aim to serve all UNESCO's member states; the documents abstracted deal with important educational matters such as legislation, policy decisions, objectives.

PEMBERTON, JOHN E.
Library services for the sociocrat.
International Library Review, vol.1, no.2, April 1969, p.277–81.
Development of study of social sciences stimulates bibliographical services; problems of listing of government publications, and demand for official and quasi-official material.

MARSHALL, MARGARET R.
Libraries in Yorkshire industry.
Library History, vol 1, no.5, Spring 1969, p.164–9.

BOSWALL, JEFFERY
A general introduction to Blows.
Recorded Sound, no.34, April 1969, p 408–11.
BLOWS (the British Library of Wildlife Sounds), a department of the British Institute of Recorded Sound.

Mechanization

PELTZ, MARGARETA
Metode şi utilajela îndemîna dumneavostră cum le folositi în activitatea de informare . . . II Metode si utilaje pentru selectie vizuala.
Probleme de Informare şi Documentare, vol.3, no.5, May 1969, p.266–78.
Methods and equipment for manual punched-card systems in information.

NYILASI, JULIA, *and* PONYI, SÁNDOR
Módositott peremlyukkártya rendszerunk.
Tudományos és Muszaki Tájékoztatás, vol.16, no.4, April 1969, p.280–6.
Edge-notched card system at the Biomedical Institute of Szeged Medical University.

*UNITED STATES, LIBRARY OF CONGRESS. Information Systems Office
MARC manuals used by the Library of Congress. Chicago, Ill., American Library Association, Information & Automation Division, 1969.
Var. pag.
Contents:
Vol. 1 Subscriber's guide to the Marc distribution service.
Vol. 2 Data preparation manual. Marc editors.
Vol. 3 Transcription manual.
Vol. 4 Computer and magnetic tape unit viability study.

COOK, MEYER
An automated library system proposal.
Special Libraries, vol.60, no.5, May–June 1969, p.288–96.
Proposal for automated circulation control using MICR (magnetic ink character reader), OCR or magnetic code reading equipment. Flow charts are included.

The INTERNATIONAL directory of computer and information system services, 1969. London, Europa, for the Intergovernmental Bureau for Information Technology, Rome, 1969. SBN 90036211 1.
xi, 337 p.

Classification and Cataloguing

HOYLE, W. G.
On the number of categories for classification.
Information Storage and Retrieval, vol.5, no.1, June 1969, p.1–6.
It is shown that under certain restrictions n items should be classified into $\sqrt{n}$ categories if the amount of information (in the Shannon sense) needed to retrieve them is to be a minimum.

ROBERTS, BETTY
Reclassification from Dewey Decimal to LC in subject blocks.
Special Libraries, vol.60, no.5, May–June 1969, p.297–8.
The experience of the Washington State University in reclassification.

CATALOGUE card service for Australian publications.
Australian Library Journal, vol.18, no.3, April 1969, p.80–2.
Card service provided by the National Library of Australia.

GILYAREVSKII, R. S.
International distribution of catalogue cards: present situation and future prospects by R. S. Giljarevskij. Paris, UNESCO, 1968.
84 p. (Unesco manuals for libraries 15.)

MUSEUMS ASSOCIATION. Information Retrieval Group. Steering Committee Working Party
Draft proposals for an interdisciplinary museum cataloguing system. [London], Imperial War Museum, 1969.
Prepared as a basis for discussion amongst members of IRGMA (Information Retrieval Group of the Museums Association).

Language and Indexing

HORIG, J.
De ce cuvinte cheie?
Probleme de Informare şi Documentare, vol.3, no.4, April 1969, p.214–17.
Why key words?

EDMUNDSON, H. P.
New methods in automatic extracting.
Journal of the Association for Computing Machinery, vol.16, no.2, April 1969, p.264–85.
Describes the computer selection of sentences having the greatest potential for conveying the substance of a document to the reader.

GOULD, LAURA, *and others*
An experimental inquiry into context information processing by Laura Gould, Deborah D. Barrett and Ralph M. Shoffner. [Berkeley], University of California, Institute of Library Research, 1969.
113 p., illus.

SMITH, STEPHEN F., *and* SHOFFNER, RALPH M.
A comparative study of mechanized search languages. [Berkeley], Calif., University of California, Institute of Library Research, January 1969.
v, 56 p., bibliog.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
Aligned list of descriptors [for] economic and social development. [Paris], [the Organisation], 1969.
5 vols.
Combined list from six sources, with separate alphabetical indexes in French, English and German.

FINCH, C. A.
An approach to technical translation: an introductory guide for scientific readers. Oxford, Pergamon Press, 1969.
xi, 70 p.

Information Processing and Systems

BALEANU, ROXANDRA C.
Izvoare de informare secundară. Descriere. Mod de utilizare. II Liste de creştere.
Probleme de Informare şi Documentare, vol.3, no.5, May 1969, p.252–8.
The main accessions lists published in Romania, and their utilization.

PEARCE, DEANNA M.
Information retrieval: methods available.
Quarterly Bulletin of the Research and Intelligence Unit of the Greater London Council, no.6, March 1969, p.12–17.
Possible information retrieval systems for the Unit's proposed Information Register. They include alphabetical indexes, classification and keyboard systems.

CURRY, A. S., *and others*
A simple infra-red spectrum retrieval system.
Journal of Pharmacy and Pharmacology, vol.21, 1969, p.224–31.
The study of the retrieval of an unknown spectrum from a medium-sized collection of infra-red curves and the development of a system based on a film feature card using microfilm storage.

JACKSON, D. M.
A note on a set of functions for information retrieval.
Information Storage and Retrieval, vol.5, no.1, June 1969, p.27–41.
Some computational aspects of an information retrieval system developed at the Cambridge Language Research Unit.

Communication and Knowledge

GYORE, PÁL
Informatika, kommunikáció, dialógus.
Tudományos és Muszaki Tájékoztatás, vol.16, no.4, April 1969, p.245–55.

The relationship between informatics and communication theory.

GROSSMAN, JULIAN A.
Time lag in the flow of scientific information: a case study of Thomas Henry Huxley, his life and writings.
Special Libraries, vol.60, no.5, May–June 1969, p.278–84.
The librarian's responsibility in eliminating the time-lag between a scientific discovery and the scientific acceptance of the new information.

Professional Activity

DEAN, J. R.
Senior staff training—an approach.
Library World, vol.70, June 1969, p.339–41.
Need for training of senior staff with library-school qualifications and little experience.

LIEBERMAN, IRVING
A working bibliography of commercially available audio-visual materials for the teaching of library science.
Occasional Papers, University of Illinois Graduate School of Library Science, no.94, December 1968, 77 p.

STATEMENT of the Special Libraries Association regarding HR 8839, a bill to establish a national commission on libraries and information science.
Special Libraries, vol.60, no.5, May–June 1969, p.304–6.

LIBRARY history in archives
Library History, vol.1, no.5, Spring 1969, p.170–3.
One of a series of surveys of record offices and other archive repositories, which attempts to discover some of the source materials of British library history.

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MEDICAL TRANSLATIONS. S. M. Bonnekamp, FIL, Member of the Translators' Guild (Med., Science & Lit.), 47 Firs Close, Muswell Hill, London N10. Tel. 01-883 3962 during office hours. After office hours automatic telephone answering machine will record messages.

TECHNICAL SWEDISH, DANISH, NORWEGIAN translated by J. T. Craddock, B COM, FIL, Ekard, Ray Park Avenue, Maidenhead, Berks. Maidenhead 24931.

RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineering. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

JAPANESE/ENGLISH, RUSSIAN/ENGLISH translations. Chemistry, medicine, biology, zoology. D. A. Fraser, BA, 22 Gresley Road, London N19. Tel.: 01-272 5664.

WILFRED E. GOODAY, ARSM, DIC, C.ENG, MIMM, FIL. Member of Translators' Guild, Romanian and French. 161 Rivermead Court, London SW6. RENown 1912.

MEDICAL, PHARMACEUTICAL, BIOLOGICAL translations from French, Romanian and Portuguese into English and from English into French and Romanian. Dr J. Jacobson, 94 Temple Fortune Lane, NW11. 01-455 1010.

TECHNICAL TRANSLATIONS from Russian, German and Polish into English. B. Klipstein, B SC(HONS), 1 Glenview Grove, Shipley, Yorkshire. Tel. Shipley 58215.

TECHNICAL AND COMMERCIAL translations from English into Russian. Mrs. O. Linsley, 31 Parke Road, Barnes, London SW13. Tel. 01-748 8822.

TECHNICAL TRANSLATIONS from Japanese into English. R. A. Scutt, BA, 48 Somerset Avenue, West Wimbledon, London SW20. Tel. WIMbledon 1713 (01-946 1713).

RUSSIAN TO ENGLISH TRANSLATIONS. Physical sciences, all industries. Fast service. Ceramics and high temperatures specialities. Kenneth Shaw, c/o CIS Ltd, Churston End, Copythorne Road, Brixham, Devon. Tel. Brixham 3221.

TRANSLATIONS: TECHNICAL, SCIENTIFIC, all west-European languages. J. Smuts, B SC (ENGINEERING), FIL, 12 Thorndene Avenue, London N11. Tel. 01-360 7723.

TECHNICAL OR COMMERCIAL translations into/from English, German, Dutch and French. A. M H. Speller, FIL, NGV, 6 Lakeside, West Ealing, London W13. Tel. 01-998 1045.

TECHNICAL TRANSLATIONS in all west European languages. Electronics and other special fields. Camera copy, printing. Peter Suchodolski, FIL (ENG), 70 Greenfield Gardens, London NW2. Tel. 01-458 2239.

TECHNICAL TRANSLATIONS. Spanish, French, German, Portuguese, camera copy or printed. E. W. Sykes, FIL, 39 West Close, Wembley Park, Middlesex. Tel. 01-904 4273.

Appointments vacant

ALUMINIUM FEDERATION LIBRARY. Applications are invited for the posts of *Librarian* and *Assistant Librarian* which will shortly be vacant in the Library of the Aluminium Federation due to the removal of the Federation's Head Office from London to Birmingham later this year.

The Library, which carries a collection of textbooks, periodicals, reports, standards and trade literature relating to all aspects of the metallurgy, fabrication and application of aluminium, serves the Federation's Staff and Member Companies and also provides an information and loan service to other enquirers.

The *Librarian* would be responsible for maintaining an up-to-date, classified collection of literature on aluminium and related topics, the preparation of bibliographies and for arranging for the translation of relevant material. A certain amount of telephone enquiry work would also be involved. Applicants for this post should have a good technical background and have studied science subjects, preferably physics and chemistry, to at least GCE 'A' level. Previous experience in a special library and a working knowledge of French and German are essential and some experience of information work would be an advantage.

The *Assistant Librarian* would assist the Librarian in the collection and classification of technical literature and be responsible for the operation of an external loan service. Candidates should have studied science subjects and at least one foreign language to a minimum of GCE 'O' level. Some previous library experience and ability to type would be an advantage.

Applications, in an envelope marked 'Personal', should be addressed to the Director of the Federation at Portland House, Stag Place, London SW1.

UNIVERSITY OF LONDON, Institute of Computer Science, *Librarian* to run small special library. Library qualifications or experience of routine library duties required. Experience in technical or academic libraries an asset Starting salary for suitably qualified applicant in range £1,300 to £1,610. Apply: The Director, University of London Institute of Computer Science, 44 Gordon Square, London WC1.

UNIVERSITY OF DUBLIN, Trinity College. *Assistant Librarian* Applications are invited from librarians with relevant professional qualifications or experience for a post of Assistant Librarian in the Technical Services Section. Duties will include supervision of Cataloguing, Periodicals, Binding and Catalogue maintenance departments.

Commencing salary will be in the range £1,585 × £65—£1,910 p.a. Additional benefits include generous holiday allowance, non-contributory pension scheme and family allowances.

Further particulars from· The Assistant Secretary (Staff), Trinity College, Dublin, 2, who will receive completed applications up to 31st August 1969.

For sale

LIBRACO 20-drawer library catalogue unit Light oak on matching stand. Offers to Box 469

The LIBRARY ASSOCIATION

ASSISTANT SECRETARY

Applications are invited for this new post which has been established to extend and improve services to members. The officer appointed will be particularly concerned with services to people working in special libraries and information departments, and with recruiting them into membership of the Association. In the beginning, at least, he will also be involved in the promotion of short courses outside the ordinary education system for all kinds of librarians.

Candidates should be Chartered Librarians or hold an equivalent qualification in librarianship or information science. They should have had practical experience, preferably in a senior capacity, in special librarianship and information work. They should also have an interest in the organisation and staffing of special libraries and information departments, and should be familiar with modern developments and techniques.

Salary, according to qualifications and experience, within the range £2,000 to £2,470 p.a. There is a contributory superannuation scheme.

Further particulars are available from **The Secretary, The Library Association, 7 Ridgmount Street, London, W.C.1.**, to whom applications, accompanied by the names and addresses of two referees, should be delivered by 30th September, 1969.

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CIBA is a world-wide organisation. Product range includes dyestuffs, pigments, pharmaceuticals, resins, technical application products, photochemicals, agrochemicals and rare metals.

An interesting vacancy has arisen for a Technical Information Assistant in a group providing an international service. The work involves detailed examination of technical literature and reports on synthetic resins and the preparation, recording and indexing of relevant abstracts.

Applications are invited from men and women aged 20–30 with a good knowledge of organic chemistry. Previous experience in abstracting scientific literature and the ability to read technical German would be advantageous.

The Company is situated in pleasant rural surroundings south of Cambridge and offers attractive terms of employment together with modern working facilities.

Please write in confidence to the Personnel Manager,

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To provide a technical information service to the Chemicals Division of our Research and Technical Development Department. Duties will cover an awareness service from a study of current literature and reports; the preparation of literature surveys and bibliographies; the indexing of research reports and the handling of technical enquiries. Candidates should have a degree in Chemistry and should preferably have prior experience in petroleum chemicals and a reading ability in one or more foreign languages. It is unlikely that anyone under 24 years will have the preferred background experience.

The post is at our Research Centre at Sunbury-on-Thames, Middlesex. Reference RCS/CE69/9 AP, Recruiting Officer J. C. Pepperell.

Technical Information Officer

To work in the Occupational Health Unit organising and providing a specialist service for gathering, storing, retrieving and supplying technical information. To review the information facilities of the Unit in relation to current and future needs. Candidates, aged 25-30 should hold a Degree in Biology (or be a graduate whose studies have included an element of applied biology) and should preferably have prior industrial experience. Membership of the Institute of Information Scientists, or experience as a Technical Information Officer is desirable.

The post is at our Research Centre at Sunbury-on-Thames, Middlesex. Reference R.10896/9 AP, Recruiting Officer A. R. Heal.

Assistant Librarian

To work in the modern, attractive library at our Research Centre, Sunbury-on-Thames, Middlesex. The library employs a staff of 6 and serves graduate and technical staff employed in Research and Development work in the petroleum industry. Applications are invited from Scientists trained in information work or from professional librarians experienced in scientific and technical work.

Reference RCS/LB69/9 AP, Recruiting Officer J. C. Pepperell.

The Company operates a progressive salary scheme and extensive fringe benefits are available including a non-contributory Pension Scheme, membership of a luncheon club (cost 1/– per day), and sporting/social facilities. Removal costs may be paid in approved cases.

Write, giving brief details of age, qualifications and experience to the appropriate Recruiting Officer, The British Petroleum Company Limited, External Recruitment, Britannic House, Moor Lane, London, E.C.2.

ESSO RESEARCH CENTRE

Head of Information Services

Applications are invited for a post at the Esso Research Centre, Abingdon, Berks.

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- To manage the operation and personnel of a section providing information and communication services in a research and development organisation.

- To appraise continuously the current and future information requirements of the Research Centre and in the light of advances in information techniques to plan and implement the actions necessary to maintain the optimum facilities and structure of the information section.

- The organisation to be serviced employs 150 graduate scientists working on applied research embracing the disciplines of chemistry, physics, engineering and allied sciences and technologies. Services currently provided include storage, retrieval and dissemination of technical and business information through library and central filing facilities, plus internal and external communications via mailing, telephone/telex and reprographic systems.

The Man

- The candidate selected will have qualified professionally as an information scientist either as such or by combining academic qualifications in an appropriate science/technology with working experience of modern information science techniques and will preferably be in the age range 30–35.

- He will also have demonstrated ability in the organisation and man management of a significant number of people, preferably including those engaged in functions other than the pure information science area.

An annual salary of at least £2,500 is envisaged initially and the employment package includes a pension scheme.

Please write summarising qualifications, experience and personal details to:

Mr. E. C. G. Jelfs (Ref. 913/BS),
Esso Research Centre,
Abingdon,
Berks.

Natural Environment Research Council

THE NATIONAL INSTITUTE OF OCEANOGRAPHY

has a vacancy for an

INFORMATION SCIENTIST to assist with the indexing of oceanographic publications and the answering of general technical enquiries. He will take part in the activities of the Institute's Library and of the British Oceanographic Data Service, and will deputise for the Senior Library and Information Officer when required Applicants should have a degree in science, preferably in physics, geology or geography, and some training or experience in information science would be an advantage, as would a knowledge of foreign languages

The appointment will be at Assistant Experimental Officer or Experimental Officer level according to the age, qualifications and experience of the successful applicant.

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Closing date: 30th August, 1969

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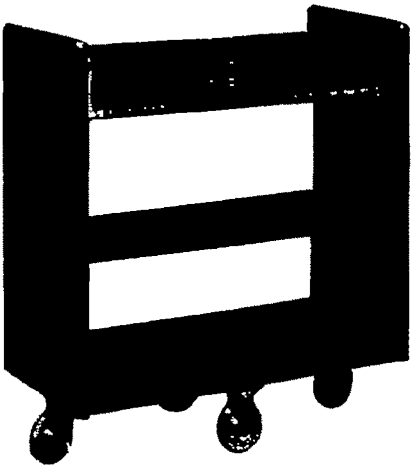

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The Institute of Information Scientists

Proceedings of the Third Conference

A full account of the papers and discussions of the Conference held at the University of Sheffield, 23–25 July, 1968. Edited by Dr. D. J. Campbell.
106 pp.

Price to Institute members, including postage: £1
Price to non-members, including postage: £1 10s.

A limited number of copies of the Proceedings of the second Conference, Oxford, 1966, are still available. In order to minimise distribution costs, the Institute is offering copies of the Proceedings of the second and third Conferences at an inclusive price of £2 to members and £2. 10s. to non-members.

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Dean of the University of Maryland
School of Library and Information Services

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Further information about Aslib's services, activities, and membership rates will be supplied on application to the Director, Aslib, 3 Belgrave Square, London SW1. 01-235 5050. Telex 23667; answer-back, Aslib London

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Report of the National Libraries Committee

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 21 **September 1969** **Number 9**

ASLIB CALENDAR 1969

September	
SUN.21–WED.24.	Aslib 43rd Annual Conference, University of Warwick, Coventry.
October	
TUE.21.	Engineering Group. Visit to Constructors John Brown Ltd, CJB House, Eastbourne Terrace, London W2.
WED.22.	Evening Meeting at Aslib. SCAN: a real-time information service for stockbrokers. Speaker: J. C. C. Dicks (International Data Highways). 5 for 5.30 p.m.
TUES.28–THU.30	Aslib/Construction Industry Research and Information Association. Joint Conference at Leamington Spa. 'It pays to be informed.'
November	
WED.26.	Evening Meeting at Aslib. The future of scientific and technological journals. Speaker: A. A. Smailes (Iliffe Science and Technology Publications). 5 for 5.30 p.m.
	1970
January	
WED.21.	Evening Meeting at Aslib. The economics of document reproduction. Speaker: T. J. Morgan (Greater London Council). 5 for 5.30 p.m.
February	
WED.25.	Evening meeting at Aslib. Facsimile transmission. Speaker: J. J. Hall (Bristol Building and Design Centre). 5 for 5.30 p.m.
April	
THU.23–SAT.25.	Aslib Joint Northern/Midland Branch Conference. Derwentwater Hotel, Portinscale, Keswick.
September	
MON.21–WED.23.	Aslib 44th Annual Conference. University of Aberdeen.

Mr D. T. Richnell

The Library Association has announced that its President for next year will be Mr D. T. Richnell, Director and Goldsmiths' Librarian of the University of London Library for the past two years. Just as the present President, Mr W. Ashworth, who was a former Chairman of Aslib Council, Mr Richnell is currently serving in a similar capacity. Aslib joins his many friends and colleagues in congratulating Mr Richnell on this well-deserved honour.

United Kingdom Chemical Information Service (UKCIS)

On 16th–17th July 1969, at Nottingham, UKCIS was host to a number of users and potential users of the computer search tapes of Chemical Abstracts Service of Columbus, Ohio. UKCIS (United Kingdom Chemical Information Service) is the substantive organization set up by COCI (Consortium on Chemical Information) and managed by The Chemical Society on their behalf. (See *Aslib Proceedings*, July 1969.)

UKCIS, through the earlier existence of The Chemical Society Research Unit at Nottingham, already has several years' experience with the CAS tapes, and the purpose of the conference was to share this experience with other users, to hear of their own experiences and to select topics for deeper analysis and possible co-operative development.

About fifty attended, including Dr Ralph O'Dette from Chemical Abstracts Service, Dr Balazs from FID, and Dr W. Ettel and Mr P. Judge from OECD. Presentations were made by members of the existing Nottingham Unit, and by the Danish, Swedish and Dutch representatives. There was also keen interest shown from France, Germany, Italy and Finland, who are not yet active users of the CAS tapes.

There was unanimous support for a continuation of the collaboration and a further meeting was planned for the autumn in Copenhagen, by courtesy of I/S Datacentralen. Several contributors stressed the need for very careful attention to 'honest' costing, both by the operators of machine search systems and by those who operate in more traditional ways.

Dr W. E. Batten

Aslib would like to congratulate Dr W. E. Batten on his appointment as first Director of UKCIS, an appointment which he took up on 4th August. Dr Batten is well known to members of Aslib as the first Manager of the Central Technical Information Unit of ICI. He is Deputy Chairman of Aslib Council, Chairman of its Research Committee, as well as Chairman of the new Council Committee on Indexing Languages.

CHEMSCAN

The Chemical Society announces that, commencing in October 1969, two new fortnightly bulletins will be published:

CHEMSCAN—Radiation and photochemistry
CHEMSCAN—Steroids.

These current-awareness bulletins contain the total output, generated by profile, of bibliographical citations obtained by computerized searches of the magnetic tape versions of *Chemical Titles*. The cost of each bulletin is £12 per annum.

FID meetings

In addition to meetings (Rome, 21st–24th October 1969) of the Executive Committee and the Council, two of the Study Committees have arranged meetings. FID/II, Information for Industry, has arranged a Symposium (see August *Proceedings*) and FID/OM, Operational Machine Techniques and Systems, is putting on a one-day Round Table on 'UDC in mechanized information systems'.

During the San Francisco meeting (1st–5th October 1969) of the American Society for Information Science FID/TM, Theory of Machine Techniques and Systems, has organized a meeting on 'Automated information networks—systems design concepts'.

FID/CLA

The Latin American Commission will hold its 9th Conference in Rio de Janeiro (28th–30th November 1969). This follows the Second Regional Documentation Congress which is being organized by the Instituto Brasileiro de Bibliografia e Documentação (IBBD) in Rio for 23rd to 28th November. FID has recently announced the election of Prof. Lydia de Queiroz Sambaquy, the former Director of the IBBD, as one of its Honorary Members.

Ph.D. in Information Science

The first Ph.D. in Information Science to be awarded in Great Britain has been gained by Mrs Suman Datta for a thesis on 'Concept Organization for Information Retrieval', at The City University. Mrs Datta has been carrying out research on concept organization and information retrieval system testing under Mr J. Farradane, Senior Research Fellow.

ACE

Articles in Civil Engineering is a new current-awareness service published monthly by the Science and Engineering Library of the University of Bradford. More than one hundred periodicals, including a fair proportion of foreign ones, are scanned regularly. Although it does not include abstracts, *ACE* translates the titles of articles not in English and supplements uninformative or ambiguous titles. The entries are arranged under broad subject headings like 'Structural theory', 'Construction materials' or 'Traffic planning'. The annual subscription fee of £7 has been fixed so as to recover the costs of production.

Austrian doctoral dissertations

For the University of Vienna the difficult problem of bibliographical control has been resolved by a series of four volumes of the *Verzeichnis der an der Universität Wien approbierten Dissertationen* compiled by Lisl Alker for 1937–44 and 1945–49, and by L. and H. Alker for 1950–57 and 1958–63, and published by Verlag O. Kerry. They are provided with composite author and subject

(Schlagwort) indexes. Taken together with the earlier index by Franz Gebauer, they provide a complete guide for the period from 1872 until 1963.

The *Dissertationsverzeichnis der Universität Graz* 1872–1963 (and a supplementary volume for 1964–65), compiled by Franz Koller and published by Verlag Notring, is a similar contribution to this control. Each volume is arranged in broad subject classes and is provided with an index of names of authors and other personal names occurring in titles.

Institute of Information Scientists—Northern Branch

The Institute is organizing a Conference and Exhibition at Castle Irwell, Salford, for Wednesday 26th November on 'Practical considerations in the installation and operation of optical coincidence card systems'. The speakers will be Messrs K. Baker and A. Johnson of BICC Ltd and Mr W. R. Moss of the University of Bradford. For further information apply to Mr L. Winestone, c/o Geigy (UK) Ltd, Trafford Park, Manchester 17.

Comparative Index to Periodical Prices

The annual survey of periodical prices, carried out by Messrs B. H. Blackwell, has been published with detailed figures in the August issue of the *Library Association Record.* It reflects as closely as possible the pattern of periodical subscriptions in specialized and learned libraries with no limitations on language, price or country of origin.

	No. of titles	*Av. price in 1969* £	*s*	*d*	*Per cent increase on 1968*	*Increase on 1965 (100)*
Humanities and social sciences	667	4	18	3	7.1	144.3
Medicine	197	9	14	11	9.8	150.8
Science and technology	896	14	4	6	10.3	158.9
TOTALS	1,760	10	3	11	9.7	155.0

An offprint of the complete article and figures may be obtained from the Periodicals Department, B. H. Blackwell Ltd, Magdalen Street, Oxford.

Technical Information on Microfilm Ltd

To help in keeping up with the rapidly changing industry of which it is a part, TIM is publishing *Information Retrieval News* (Issue 1, July 1969). It incorporates *TIM News* and will continue to cover TIM's activities, but the scope will be wider.

LOUD REPORTS: a look at the scene as the smoke clears away

West Ham College of Further Education proposes to hold a one-day Course/Conference on the above theme from 9.45 a.m. on Thursday 2nd October 1969. It will consist of five lectures dealing with the implications of the PARRY, FULTON, DAINTON and MAUD Reports for librarians and information workers, followed by an Audience Participation Session. Fees £2 10*s* for the whole day or 12*s* 6*d* for each of the separate lectures. Further details from A. E. Standley, BSc(Econ), FLA, DGA, Course Tutor in Librarianship, West Ham College of Further Education, Welfare Road, Stratford, London E15. Telephone 534 4545, ext. 619

BRIEF REVIEWS

BRUNN, ALICE L. How to find out in pharmacy: a guide to sources of pharmaceutical information. Oxford, Pergamon Press, 1969. 140 p. 30*s*. (SBN 08 013949 3.)

This book aims to introduce pharmacy students to the literature and libraries of pharmacy, and to provide a reference guide in answering specific questions. Covering only English language books, it is in effect a selective bibliography with linked comment and arranged in sections corresponding to the Dewey Decimal Classification. In two appendices it lists libraries in the USA and Canada, and in the United Kingdom.

DEUTSCHER NORMENAUSCHUSS. Verzeichnis vom Schrifttum-Auskunftstellen, bearbeitet von Sigrid Barlen. 6te Auflage. Berlin, Beuth-Vertrieb, 1968. 217 p.

This useful directory of German special libraries and documentation centres covers research associations, academic institutions and private firms. The arrangement is by subject in UDC classification and within each subject alphabetically by name of organization. Each entry has a running number and gives the name, address, telephone number and telex number of the organization and the year of its establishment. Both the main subject field and the fringe interests of the bodies are described and there is a brief indication of the nature and organization of its resources. The services provided and their availability to outside enquirers is indicated and any publications are listed. The directory is well indexed and the information is readily accessible. The subject index gives both main and fringe subject fields and related subjects are cross-referenced. The name index is in alphabetical order with the running numbers of the entries. A place index gives towns in alphabetical order with an alphabetical list of organizations under each town.

GILCHRIST, A., and GASTER, KATHLEEN. Information systems relating to the construction industry. Garston, Watford, Building Research Station, April 1969. (Current paper 11/69.)

Aslib was commissioned to undertake this investigation as part of a BRS study of coding and data co-ordination for the construction industry. Its object was to describe a number of schemes (it turned out to be sixteen) according to certain parameters, so as to identify the criteria by which systems of data co-ordination should be assessed.

In the survey section of the report the various schemes are described in six sections:

(*a*) library-based, e.g. UDC, SfB;
(*b*) commodity coding, e.g. NATO/DCA;
(*c*) management information, e.g. Cape Universal Products;
(*d*) manufacturer/design liaison, e.g. Crittall;
(*e*) bill of quantity, e.g. Ministry of Public Building and Works;
(*f*) systems of wider scope, e.g. CLASP.

INSTITUTE OF INFORMATION SCIENTISTS. Proceedings of the third Conference at the University of Sheffield, 23rd–25th July 1968. London, 1969. 30*s*.

More than half the papers presented dealt with aspects of computer-aided information retrieval: M. F. Lynch on searching chemical structures, A. K. Kent on the Chemical Society's Research Unit at Nottingham, H D. M. Jager on the Mass Spectrometry Data Centre at Aldermaston, H. F. Vessey on plans for report retrieval and SDI at the Ministry of Technology Technical Information and Library Services (TIL), T. M. Aitchison on the INSPEC system, and M. Phillips on the work of the National Computing Centre. Industrial communications (J. M. Myers) and the compilation of a selective abstracts journal (A. E. S Mills) are discussed partly from the point of view of SIRA. There are also papers on staff selection (C. W. Hanson), the programme of OSTI (R. E. Fairbairn), the Sheffield Report on education and training (W. L. Saunders), and the main sources in Britain of metallurgical information (R. Popper).

INTERNATIONAL LABOUR OFFICE. The yearbook of labour statistics, 1968. (28th issue.) Geneva, 1968. 757 p.

The 1968 yearbook presents world-wide statistics on labour and conditions of work in more than 170 countries and territories. It includes data on employment and unemployment, hours of work, labour productivity, wages, consumer prices, industrial accidents and industrial disputes.

This year is the fiftieth anniversary of the International Labour Office and this edition of the yearbook also includes a seventeen page section, entitled 'Fifty years of social history: a statistical outline'.

MACKENZIE, A. G. Bulgaria: mechanization of documentation services. Paris, Unesco, 1969. 37 p. (Serial No. 1104/BMS.RD/DBA.)

This is a report by a Unesco consultant of a six-week mission to make a survey of documentation centres and draw up a plan for their mechanization. A unified national automated information system is recommended as the long-term target. In preparation for these future developments a rationalization and improvement of some existing practices as well as the adoption wherever possible of international standards is necessary. There is a need for an increase in the quality and quantity of new recruits to the profession, and for experience on operational computer systems abroad.

NOTTINGHAM AND NOTTINGHAMSHIRE TECHNICAL INFORMATION SERVICE. NANTIS handbook and directory of resources, compiled by M. J. Stacey. 4th ed. Nottingham Central Library, 1969. £1.

This directory gives details of the members of the NANTIS co-operative scheme. They include firms with and without libraries, public libraries and other organizations.

The information given for each member includes the subject interest of the library stock; special collections such as reports and standards; photocopying equipment and microform readers; loan facilities and the form in which enquiries can be received, e.g. by letter, personal application or telex. Published lists of periodical holdings are noted.

This is a useful guide to the library and information services in the Nottinghamshire area.

THE PENROSE ANNUAL. vol. 62. Ed. by H. Spencer. London, Lund Humphries, 1969. 70*s.*

This issue maintains the consistently high standard we have come to expect. From the point of view of documentation, for which printing is a somewhat marginal field, the articles of primary interest are:

Moran, J. Printing in the seventies.
Corrado, V. M. Linotron 1010, page maker.
Henrion, F. H. K. Semiotics—not semi-idiotics.

Here are a few quotations which are significant for us.

> 'Now that photosetting is likely to be the fastest moving development in printing, the premature cry of the fifties—"Gutenberg is dead"—may re-echo more strongly in the seventies and with better reason.'
>
> 'The battle between letterpress and offset lithography will gradually take over in the next decade, though the possibilities of changes in lithographic technique should not be overlooked.'
>
> 'The dark horse is "electrostatic printing".'
>
> 'It was a year in which the new battled with the old, as it always does, but at a quicker tempo and in a growing number of fields. In Britain the year 1968 brought important events affecting union structure and the apprenticeship system, at the same time as the six-year-old web-offset "revolution" gathered momentum.'

This year there is a very stimulating bibliographical addition, 'A check list of Penrose articles 1895–1968', a quick guide to the contents of the first sixty-one volumes. The 2,466 articles are grouped under subject headings, arranged in alphabetical order.

SAUR, K. G., *compiler.* Internationales Verzeichnis von Abkurzungen/International guide of abbreviations. München-Pullach, Verlag Dokumentation, 1968. 2 vols.

An international directory of about 36,000 abbreviations of organizations and associations. There are two volumes (A-M and N-Z) listing the abbreviations in alphabetical order with the name of the organization and country. A 200-page list—one could not call it an index—gives the abbreviations alone under their countries. Throughout the directory names of countries are given in German only. There is a four-page bibliography of dictionaries of abbreviations of technical terms, which this directory does not attempt to cover.

SMITS, RUDOLF, *comp.* Half a century of Soviet serials, 1917–1968: a bibliography and union list of serials published in the USSR. Washington, USGPO, for Library of Congress, 1968. 1661 p. (2v) $16.

This publication is a union list of serials published in the Soviet Union from 1917 to 1968. It includes the holdings of both American and Canadian libraries. All known serials appearing in the Soviet Union at regular or irregular intervals since 1917 are listed; the only exceptions are newspapers, and publications in oriental languages. The definition of a serial that has been used includes periodicals, annual reports and transactions, and papers of numbered conferences.

The entries are comprehensive: for each title, the place of publication, the year the serial was first issued, frequency, the name of the issuing body, and miscellaneous remarks covering details of suspension of the publication for certain periods and variations in title are shown. There are numerous cross references including alternative titles in Western languages. Serials known to exist but of which there are no known holdings in North American libraries are indicated.

This new publication supersedes and enlarges *Serial Publications of the Soviet Union 1939–1957*: in this previous volume an English language subject index was included and although it would have been a sizeable undertaking for the present work the earlier index has proved a useful additional finding tool.

The publication is well produced, clearly set out and extremely comprehensive. It will be of enormous value to those trying to locate, and untangle the ramifications of, Soviet serial publications.

THEATRE documentation. New York, Theatre Library Association, 1969– (vol. 1, no. 1 is for Fall 1968.)

This new international medium of communication between theatre scholars and collection curators is due to appear twice yearly, in autumn and spring. Its declared scope is bibliography, classification and collections; theatre practice and education; and news of international theatre scholarship. This first number starts with a bibliography of Harold Pinter, describes the classification for documents on the dance, and includes notes provided by the Section internationale des Bibliothèques et Musées des Arts du Spectacle of IFLA.

VADEN, WILLIAM M. An analysis of world-wide contributions to *Nuclear Science Abstracts* volume 22 (1968). Oak Ridge (Tenn.), USAEC, 1969. 98 p. (TID 25004.)

Although the number of abstracts published by NSA in 1968 is twenty times greater than when it started in 1948, since 1958 the rate of growth is no longer steep and is approximating to a plateau. In a series of useful statistical analyses this report breaks down the coverage by the nine NSA categories, by total literature contribution by countries and by forms (periodical articles, reports, patents, books). In an appendix it is shown how the six top countries contribute (with a breakdown by categories): USA 41.9 per cent, USSR 13.4 per cent, UK 7.3 per cent, Germany (West) 5.5 per cent, France 5.4 per cent and Japan 5.3 per cent. Finally there is a list of 350 periodicals ranked in order of productivity for NSA.

FOUR THESAURI

Of the following four thesauri, three are second editions which all display marked differences of detail from their previous versions and the fourth is new; the second editions are American, the newcomer is British. Two of the American publications stem from the subject headings tradition and the other belongs to the EJC school. The British thesaurus is the shortest and follows the principle of compression.

WILLIAMS, B. J. S. NRCd DTL Services. Thesaurus of microform terms by B. J. S. Williams. Hatfield, NRCd, 1969. 38 p. 25*s* (NRCd subscribers), 50*s* (others).

DTL stands for Desk Top Library and this thesaurus is designed for such a purpose in conjunction with tab cards used manually as feature cards. There are about 240 terms, of which about two-thirds are preferred. There are syndetics indicating both hierarchic and cross relationships and digraph codes are used for such things as trade names.

SCHULTZ, CLAIRE K. Thesaurus of information science terminology. Revised edition. Washington, Communication Service Corporation, 1968. 246 p. $4.

The main difference between the two editions is that the second has been produced in pocket-size format. This is a 'personal' compilation, used in practice and as a teaching aid for the Drexel Institute Information Science Students. There are about 350 preferred terms, out of a total of about 1,250 arranged with x and xx type syndetics. The preferred terms are also displayed in sixteen broad categories.

BACKER, STANLEY, *and* VALKO, EMERY I. (editors). Thesaurus of textile terms covering fibrous materials and processes. Second edition. Cambridge, Mass., MIT, 1969. 448 p. £11 14*s*.

In expanding its scope the second edition has almost doubled its number of preferred terms to a total of 8,000. Although in the EJC style, the second edition has dropped the practice of referring the user from certain fringe terms to the EJC thesaurus. The publication has three interesting appendices: the first discusses problems of textile information retrieval; the second discusses ground rules for the use of the textile thesaurus, and the third is devoted to tables of hierarchical relationships.

UNITED STATES. Department of Health, Education and Welfare. Public Health Service. Medical and health related sciences thesaurus. Second edition. Washington, The Service, 1969. 460 p.

This thesaurus has increased its main headings from about 6,700 to 9,200 and is notable for its range of syndetics, based on subject headings practice. SA stands for 'see also' and indicates either 'see also related' or 'see also specifics'; XX is the reverse of SA. *SEE* also serves a double function meaning either 'see synonymous' or 'see specifics', and X is the reverse. There is a *USE* instruction from lead-in to preferred terms, for which the reverse symbol is UU. In addition to these there are symbols which relate to 1,800 terms which are used for computer retrieval only. These terms are flagged with the sign ***SEARCH TERM***. The code IA used after ***SEARCH TERM*** is a post on signal to include the generic term and the reverse (not a posting signal) is AI.

REPORT OF THE NATIONAL LIBRARIES COMMITTEE

COMMENTS ON THE DAINTON REPORT SUBMITTED BY ASLIB TO THE SECRETARY OF STATE FOR EDUCATION AND SCIENCE

Introduction

WE welcome the report of the National Libraries Committee partly because it indicates a recognition of the importance of library services to the nation and of the advantages of moving towards a coherent system but, more particularly, because the central proposal to bring the main libraries of national standing within a unified administrative framework should lay the foundation for a full and efficient service, at least at the national level. It seems clear that the management board is envisaged as a body of sufficient authority to ensure integrated planning and common forward policies and procedures, and we therefore hope that there will be no undue delay in introducing legislation to establish the proposed authority.

Nevertheless, we do have doubts and misgivings about certain of the proposals, whilst in some important respects the report lacks the clarity and precision necessary for a proper appreciation of what is intended. It would therefore seem prudent to recognize that the NLA will itself need to give further consideration to a number of proposals and that, in consequence, its hands should not be embarrassingly tied in advance by its terms of reference. After all, the task for the NLA is to develop a policy, not to implement one laid down for it in advance, and to this extent we regret that the committee should have committed itself to specific recommendations on a number of matters best left to the NLA's judgement.

The major references to Aslib itself (with the exception of the Commonwealth Index of Translations in §418) are particularly puzzling, partly because they are nearly always to 'OSTI and Aslib' and seem not to distinguish the very different roles that the two organizations fulfil, and partly because some appear to be contradictory of others. For example, the first paragraph of the Summary of the Principal Recommendations states that the Authority 'should also assume full administrative responsibilities for certain functions relating to research, bibliographic activities and translations, now carried out by OSTI and Aslib', and §482 states 'this Authority should assume full administrative responsibilities for those functions and services of OSTI and Aslib which we have suggested should form part of the national libraries organization'. In fact, the report suggests only the transfer of the Commonwealth Index of Translations from Aslib to the NLA, and to this we refer later.

National library services for the future (§§226–234)

Whilst Aslib's interest lies primarily in the field of science and technology, we are nevertheless concerned at the wide divergence in the report's approach to the treatment of science and technology on the one hand and that of the humanities and social sciences on the other. This is most apparent in §229, where the importance of the nation's economic well-being seems to obscure the value of studies unrelated to industry and leads to the conclusion that in other fields 'it will probably continue to be impracticable to provide comprehensive coverage or so elaborate a range of information services'. This conclusion is not only unpalatable but also unproven and may well be economically unsound also.

For example, it is clear that to extend the NLLST's coverage of worthwhile foreign periodicals to include the humanities would not be particularly costly in relation to present expenditure; this may also be true of the extension of BML coverage to include all monographs if all the costs involved are taken into account. But the knowledge that the combined resources of the units of NLA provided at least one copy of all worthwhile foreign publications—available for reference, photocopying or in appropriate cases for loan—would have a profound effect on the acquisitions policies of other libraries, many of them also financed from public funds. Thus, so far from being impracticable on economic grounds, comprehensive coverage in NLA of foreign material in all subjects could well be a measure of overall national economy.

This need not necessarily mean that all material would have to be stored in NLA units. Responsibility could be shared with other libraries, but it would be pointless to depend upon conventional co-operative schemes because the needs of individual libraries change, and because responsibility for acquisition 'by subject' or 'by country' is too haphazard. We envisage that NLA would be responsible for ensuring, probably through agents overseas, the acquisition of a copy of every significant publication for the UK. Any delegation of responsibility for storage and servicing would be at the discretion of NLA, but any such delegation would need to cover clearly defined categories of materials and *not* be loosely defined by subject or country of origin.

We regret the omission from the report of a firm recommendation for the building of a retrospective collection for loan purposes. We do not suggest that NLA should attempt to purchase such material retrospectively on any significant scale, but we do consider that there is a strong case for a national repository in a low-rental area to which libraries should be encouraged to send low-use material in the knowledge that it would always be available for loan. Such a repository could prevent the growth of local and regional repositories and could also save library space in high-rental areas. Only NLA could undertake a project of such manifestly national utility

Reference facilities (§§279–366)

We concur in the conclusion (§358) that the Bloomsbury site is the most suitable for the NRL and note the conclusion (§366) that the CSPC should also be in central London, though not necessarily on the same site as the NRL. Although the report shows that the frequency of coincidence in consultation of material in the sciences and humanities is not at present very significant, we consider that it would be imprudent to plan exclusively on this basis. As we pointed out in our evidence to the committee, the extent of reference across disciplinary boundaries is subject to many factors, some apparently extraneous and some doubtless not yet even recognized. It is not unlikely that, with greatly improved services, better indexing standards, new subjects of research and new groupings of subjects, such reference will increase substantially in the future. Moreover, there are some subjects—e.g. geography, psychology, ergonomics—which would be markedly handicapped by separation of the two reference collections, and the difficulties that can be seen now may well be magnified in the future. With the long-term future in mind, therefore, we would urge that every effort be made to earmark a site large enough to accommodate the NRL and the CSPC together in a common building complex with the added economy of integral planning. Nothing would be lost and, in the long run, much might well be gained by so doing. If site considerations make this quite impossible, the two libraries should at least be within easy walking distance of each other.

With regard to the present NRLSI, we are not entirely satisfied that 'Central Science and Patent Collections' is the right concept of this library nor that the name is the most appropriate that could be found. On the contrary, from the text of the report, the committee's concept would seem to be closer to 'Central Patent and London Regional Science Collections'. Nevertheless, whilst it may appear that the pattern of use of the library is mostly regional in character, the library does in fact play a major national role, since large sectors of industry located all over the country have London-based staff or agents to exploit its resources. For example (page 272), one-half of the librarians and technical consultants in the readership survey were seeking information for clients outside London. We believe it to be important to reaffirm this national role and to regard the library as an integral part of the national reference collection. And since it has become well known as the National Reference Library of Science and Invention, we should be happy to see this name, which fairly describes the library's function, preserved.

We recognize a further danger in the committee's thinking, particularly in view of the final sentence of §307, namely that the science collection may well be all but exclusively orientated towards industrial interests. Whilst we attach maximum importance to industrial needs we also believe that wider coverage is essential and that it should include, for example, earth sciences and biological sciences. This is not to say that we argue necessarily for comprehensiveness of titles so long as its lines of communications to Boston Spa are efficient, but we do argue for comprehensiveness of scientific disciplines covered.

Finally, whilst we strongly support the committee's case for better reference services in all major concentrations of industry, we believe that there is a similar need—as we pointed out in our evidence—in all the main centres of population, the location of the services to be determined on a demographic, rather than a regional, basis.

Bibliographic facilities (§§388–431)

We note the committee's view (§415) that the national bibliographic service should be responsible for co-ordinating the total national scientific bibliographic effort, but do not see how in practice it could 'represent internationally British interests in this field'. These activities at the international level are spread over a formidable variety of organizations such as FID, IFLA, ICSU, WHO, FAO, CIB, to name only a few. In some instances, bibliographical activities are integrated with a variety of other library and information activities and representation for bibliographical purposes could not be isolated—nor is there any clear reason why it should be. In others, as can be concluded from §413, representation needs to be vested in individuals who are themselves subject specialists actually engaged in the major services in their field. We consider, therefore, that further consideration will need to be given by the NLA to this aspect of the committee's proposals.

We would gladly discuss with the NLA, when it is set up, the future of the Commonwealth Index of Translations (§418), though the question of translations is considerably more complex than the report makes clear. It seems to us that, in the first instance, a decision of policy on the treatment of translations in the national library needs to be taken. It may well be that the proper function of a national library is to collect translations and to lend them like any other item of literature; indeed, it is not clear why, as the report indicates, NLLST should have started to index translations not included in its own stocks, since it was Government policy to support the Commonwealth Index maintained by Aslib from long before the establishment of NLLST.

Whatever the policy decision arrived at, the position of the Commonwealth Index is further complicated by other factors. First, approximately 70 per cent of the contributors are industrial organizations and many of them, for reasons of industrial security, have indicated that they are only willing to contribute to a location-indexing scheme over which they exercise an element of control as they do through membership of Aslib. Second, it is to be expected, as the report makes clear, that bibliographical publication will be a main characteristic of the national bibliographical service, whilst publication of the translations index has been opposed by contributors on the grounds that the purpose of the index is to satisfy specific needs through co-operation, *not* to publicize the existence of translations and thus create an inflated demand for copies. Third, operation of the Index by Aslib and the financial savings that can be instanced through it are a cogent inducement into membership of Aslib for industrial companies. It could be, therefore, that the major benefits of the Commonwealth Index would be lost by following the report's recommendation, and that the net effect would be only to reduce Aslib's capacity to provide a valued service.

We note, and subscribe to, the word of warning (§§403 and 420) about the danger of increasing duplication among referral services and, also, the highly specialized nature of loan location work. Aslib has itself developed both these types of activity to a high degree over many years, both by building up a variety of complex indexes and by training a staff in the sleuthing methods which can be so important in tracing obscure documents. We believe that a membership structure—in which continuous contacts encourage imaginative understanding of the range of subjects and literature likely to be covered, as well as easy personal relationships—is particularly hospitable to both types of activity, and we express ourselves ready to co-operate fully with the NLA in ensuring that its and Aslib's resources are made complementary rather than competitive.

Research and training (§§448–470)

We welcome the committee's recognition of the importance attaching to library and information research, and especially of the need (§467) to co-ordinate any research activities to be undertaken by the NLA with those of other organizations; there is much sense in the recommendation that the creation of machinery be considered to bring together the major national interests engaged in this work. The number of people qualified to undertake research in this field is small and the cost is correspondingly high. It is therefore most undesirable that the main research agencies should become involved in competition for scarce manpower, and it is essential in our view to establish an appropriate framework and terms of reference under which fruitful forms of co-operation between NLA and the other major research bodies can be established.

These wider considerations suggest that the scope of the NLA's research responsibilities need to be the subject of more detailed consideration. Though the report gives some examples, the committee's concept of what constitutes research in the field does not emerge clearly and §§449 and 450 are thought to cover work which includes research, development and some other activities which cannot properly be classified as either. The NLA clearly has a contribution to make here, especially with reference to its own planning and development. It may well be, therefore, that its main concern should be with development rather than research. But it is not immediately clear that the NLA is the most appropriate body to plan and support the major part of library research. Unfortunately, the report is unclear as to precisely what the committee envisages with regard to the extent and nature of OSTI responsibilities to be transferred to NLA, but it would seem that some source of national funding of research over fields of interest wider than those of NLA will continue to be necessary.

Too much should perhaps not be made of the references to professional training of librarians and the organization of conferences (§§468–470) but their inclusion underlines the need for a clear understanding of the relative roles of the NLA, the teaching institutions and the professional associations, as well as for continuous contact and discussions to ensure that their roles are kept complementary and are not allowed to become competitive.

Management and administration (§§471–508)

The management organization proposed for NLA is, we think, broadly satisfactory and we welcome the separation of decision-making on policy from executive functions (§478), as well as the proposal (§485) to organize the Management Board on a functional rather than a library unit basis. It is important that the heads of units should have a full share in policy development, as distinct from policy decision-making, and this appears to be permitted in the suggested structure at the Executive Committee and sub-committee stages. However, the structure outlined (Fig. 15) must presumably be regarded as a suggestion only; we would expect the Management Board itself to be responsible for determining the internal administrative machinery.

Where some confusion appears to exist is in the relative roles of full-time and part-time members of the Board. (§484 (i) and (ii) and §492) taken together, seem to suggest that the full-time members would supply the 'management' expertise and that the part-time members would represent the links with the wider library world. If so, the needs of efficiency would suggest that the roles should be reversed. For example, the Board member for bibliography would need to be at least as experienced in bibliographical work as the head of the bibliographic unit if he is to carry more than nominal responsibility for the national libraries' bibliographical policies and to stand advocate for them in the Management Board and the world outside. Part-time members, without continuous contact with NLA, would be at a disadvantage in such a role but could, on the other hand, supply experience less likely to be available in the full-time members, e.g. of finance or personnel policies from the business world or government. We do, however, consider that the amount of time to be required of part-time members should be quite substantial, at least in the formative stages.

It does not seem an entirely happy arrangement for the Board Chairman to be Chairman of the Executive Committee whilst other Board members are not members of it. We foresee that the Chairman could be in the position of presenting for Board decision recommendations on behalf of the Executive Committee concerning a function, in the formulation of which the Board member for that function had played no part at the most crucial of the policy development stages and was therefore unable to argue cogently for or against. There would seem to be every advantage in making all full-time Board members members also of the Executive Committee, but defining clearly the decision limits of Board (without unit heads) and Committee (with unit heads).

ESRO/ELDO SPACE DOCUMENTATION SERVICE

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Paper presented at the 18*th Annual Conference, Aeronautical Group, Cranfield,* 11*th*-13*th April* 1969

I WOULD like to begin by quoting a brief passage from the General Report for 1968 of the European Space Research Organization:

> The year covered by this report has undoubtedly been the most momentous in the Organisation's five years of existence. In the earlier years ESRO . . . had been engaged on the hard and often frustrating work of organisational build-up and initiation of projects. This work was of the highest significance, but, for these years, the actual return in terms of scientific data was limited to those gained from the Organisation's sounding-rocket programme.
>
> This situation has now radically changed. For, during 1968, these long preparations began to bear fruit and ESRO came to full operational status. At the end of the year we had three satellites in orbit, with all twenty-two experiments working well and transmitting valuable data. They include the most complex satellites ever designed and built in Europe, or operated from Europe. These three launchings represented the essential visible evidence of the change in character of the Organisation from that of a developing body to that of a fully developed, operational one.

This progress has been achieved by an organization less than five years old. The Space Documentation Service was first established in November 1965, so that we are not quite three and a half years old. I believe that during this year it will be reasonable to make a similar claim, that the Space Documentation Service, like its parent organization, will also have reached a fully operational state. This does not, of course, imply that development will cease and we see this as a continuing process for some time to come. However, this year should see a significant landmark in the development of SDS, in the change-over from the computer searching of NASA magnetic tape documentation files by a contractor in Washington (with all its attendant difficulties) to in-house processing on an ESRO computer. Not only will this reduce drastically the frustrating but unavoidable delays inherent in such a mode of operation, but the virtual elimination of the communication problem will contribute enormously to the overall efficiency of the system. However, in addition to the obvious potential for speed and efficiency which in-house processing should yield, we are also excited about the possibilities for modification and extension of the services in response to user demand. Hitherto, such possibilities were not open to SDS due to the high cost of external contractor operation.

Of the developments currently under examination by SDS I shall mention two which I hope will be of special interest. During 1969, following the satisfactory implementation of a system to process the NASA documentation files on an ESRO computer located at the European Space Operations Centre at Darmstadt, Germany, we plan to install remote terminals connected to the computer via telephone lines, so that remote on-line interrogation of the master documentation file will be possible. A second line of development, completely divorced from the NASA system, is the implementation this year of the first steps towards a new ESRO data bank. This first project will involve the introduction on to the computer file of product and test data on electronic components of European manufacture. On-line interrogation via remote terminals will be provided and other services planned include fortnightly current awareness notices giving product information in detail on newly introduced electronic components, specialized catalogues, and a general file enquiry service via telephone or telex. The enquiry service will identify the existence and availability of approved test and reliability data relating to a specific electronic component, in addition to providing detailed component descriptions, availability, etc.

The Space Documentation Service in its current form was made possible as the result of an information exchange agreement which was concluded between the National Aeronautics and Space Administration in the United States and ESRO/ELDO in Europe. The agreement enabled NASA to provide the magnetic tape files of references to unclassified documents in the aerospace field (currently about 400,000 documents), mainly scientific and technical reports appearing in the STAR abstract journal published by NASA, and periodical articles abstracted in IAA—International Aerospace Abstracts published by the American Institute of Aeronautics and Astronautics. In addition NASA was able to provide collections of the reports themselves in master microfiche form together with the computer programs necessary to maintain and search the machine files.

I would like to digress briefly to emphasize here the exchange nature of the agreement. The result for European scientists and engineers is that through SDS they have identical facilities, for unclassified aerospace literature, with those available in the United States to NASA personnel and other approved users. ESRO tries to satisfy the exchange nature of the agreement by serving as a central gathering ground for aerospace reports generated in Europe, which are then sent to NASA completely processed for direct input both to the STAR abstract journal and to the NASA computer documentation file, without further human intervention at the NASA Scientific and Technical Information Facility. This processing includes the provision of abstract, notation of contents, indexing, descriptive cataloguing, and the preparation of punched paper tapes containing coded directions for the Photon composing machine used in the preparation of STAR. Following a joint examination with NASA early in 1968, the Director General, ESRO, advised all member states that it appeared that the volume of input of report literature from European sources was not representative of the European space effort. Subsequent response was encouraging, and action at the national level coupled with a drive by the SDS customer liaison group resulted in a threefold increase in the volume of reports received and processed per month (300 per month at the end of 1968 compared with 100 at the end of 1967).

To return to the data processing aspects of the system, the magnetic tape files and the necessary computer programs to process them, which NASA has been able to release to ESRO, were originally developed for the IBM–1410 computer. In addition a completely new system is under development by NASA for the IBM–360 series of machines and under the terms of the information exchange agreement NASA has agreed to release this system to ESRO.

As ESRO does not operate an IBM–1410 computer and does not have an emulation capability, processing the NASA 1410 tapes in-house would have involved re-programming of the original system. A knowledge that a new NASA system was under development and would be made available to ESRO was a significant contributory factor in the decision to operate on an external contract basis as an interim measure. Other reasons were the shortage of staff, particularly data processing personnel with a familiarity with large bibliographic file handling techniques, and the obvious difficulties involved in setting up the European input processing function, remote from the NASA Scientific and Technical Information Facility in Washington, in custom and language as well as in distance. Even as recently as just one year ago SDS was operating with only two professional staff.

During 1968 a team of customer liaison specialists has been built up. The members of the team are multilingual scientists or engineers with a knowledge of information systems, who provide the liaison between SDS and the user. The success of this team is illustrated by the increase in the volume of services provided (two and a half-fold). However, this degree of success is becoming something of an embarrassment in that the current volume of services is stretching the 1410 operation virtually to its limit and is also resulting in budgetary problems due to the ever-increasing costs. The NASA 1410 system searches linear files on magnetic tapes. The current master file size is approximately 400,000 records and is increasing at the rate of about 7,000 records each month. The machine component of the cost of a retrospective search is essentially proportional to the file size and is thus increasing at a rate of about 20 per cent per year.

We expect the implementation of a new system on our own computer to resolve most of these problems. It will create a number of inverted files on the most frequently used fields, and the linear file will be resident on direct access storage devices, thus it will not be subject to the restrictions inherent in a tape-driven system.

NASA-RECON (Remote Console) retrieval system is a development of the DIALOG system designed by Lockheed Missiles and Space Company, which has been specially modified to satisfy NASA requirements and to interface with the NASA documentation files. The system provides an interactive retrieval language so that a user is able to partition the file of document records whilst developing a search query such that he rapidly converges on a relevant set of citations which may be paged on the display prior to print-out. Terminals, remote from the computer, comprise keyboard-visual display-teletype configurations which are connected to the computer via telephone lines. The keyboard is used to communicate commands to the computer whilst the visual display device, and optionally the teletype, return information to the user. The system has already been in very successful experimental use for over twelve months, implemented on the NASA 1410 documentation file containing about 400,000 records. The ESRO installation of NASA-RECON will closely resemble the initial trial phase with NASA. That is, the system will read and process the NASA 1410 magnetic tape files, re-writing these to direct access storage devices. This will provide SDS with the capability to operate on an ESRO computer. We hope that the interim ESRO remote interrogation system will go live some time in June 1969, using an IBM–360/65 computer located at the European Space Operations Centre, Darmstadt, and with remote terminals at the Paris Office, ESTEC-Noordwijk, and at Darmstadt.*

SDS is enthusiastic about the potential benefits to be gained through on-line file access. We also believe that it is not always possible to determine on paper the value of a potential system improvement, but that it is often necessary to try it out to obtain a realistic answer. A careful examination will be made of the utilization and effectiveness of the on-line system during the initial operational phase before any attempt is made to install additional remote terminals. However, there are certain benefits which we feel are immediately apparent and do not require detailed statistical analysis in justification. For example, we expect that use of the terminal by SDS documentalists for SDI profile preparation or search query formulation will improve markedly the quality of the system output. A compromise recall/relevance ratio can be selected and verified in advance, virtually eliminating wasteful re-runs on the computer and frustrating delays for the user. The normal application we see is the use of the terminal for the development and definition of a profile or search query, with, in the latter case, printing of search output at periods of low printer demand, i.e. a form of remote batch entry. However, the capability for immediate output of search results is always available for that small but significant proportion of searches which really do carry a measure of urgency. It is possible that sufficient terminals will eventually be installed to ensure that no ESRO scientist or engineer will be separated by more than a few minutes from his sources of information on the computer. This could be assured with a relatively small number of terminals, say about eight or nine. SDS is also aware of the potential demand for, and the desirability of, data links to national documentation centres in the member states should the computer services of the European Space Operations Centre be equipped to support a large number of on-line links.

If one term has been particularly noticeable in what I have said up to now in discussing SDS that term must surely be 'NASA'. This reflects the degree to which SDS services are currently NASA-based, using the magnetic tape files and the computer programs supplied by that organization as a result of the information exchange agreement. Such an agreement became possible as a result of both European initiatives and NASA's policy of Technology Utilization. Call this policy spin-off, slop-over, or what you will, it is essentially an attempt to facilitate the dissemination of new information, new knowledge, new techniques, well outside the immediate environment in which they are discovered or generated, to a very much wider audience where they may be utilized in ways which were probably never anticipated by their inventors or discoverers.

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*Initial acceptance trials of the ESRO remote interrogation system have now been completed and the system is operational using a visual display terminal at ESRO HQ, near Paris, linked to the master data file at the European Space Operations Centre at Darmstadt, West Germany. Other terminals at the European Space Research and Technology Centre, Noordwijk, The Netherlands, and at Darmstadt were planned to be operational by the end of July.

More recently ESRO has begun to look at the possible ways in which it too might implement a policy of technology utilization, with which SDS will be intimately associated. Any technique which seems open to us and which might help to lubricate the mechanism of information transfer will be carefully examined. However, in the case of ESRO it is not possible simply to base the policy on that adopted by NASA, even if we wished to do so, because of the widely different contract conditions surrounding ESRO and NASA contracts. Whereas the results of a NASA contract become the exclusive property of NASA, in the case of the European space organizations, for any application outside the aerospace field (i.e. precisely those areas with which a TU effort would be concerned) the contractor retains full proprietary rights for the exploitation of any invention arising from an ESRO or ELDO contract. Clearly, before ESRO is able to institute anything like the NASA Tech. Brief, TU Report, TU Survey type of service there are some formidable problems to be overcome. However, we feel in SDS that we have already begun a TU program with the establishment of SDS itself and the services which it already provides.

I would like to talk now briefly about the feasibility study for a new project which we are currently examining, and which, if it results in the setting up of an operational system, will provide another facet to the ESRO programme of technology utilization. The project under examination is for the creation of a data bank of information on European electronic components, with the capability for extension to include other data fields such as, for example, materials for use in the space environment. The idea grew out of a requirement at the European Space Research and Technology Centre for a data bank of quality and reliability test data to be used to aid in the selection of high-reliability European electronic components for use in ESRO satellites. Implicit in this function is the assessment of components in-flight in existing satellites; the determination of the component types which could be provided by European manufacturers; the assessment of European manufacturing capability in this field, and the formulation of ESRO component space-qualifying specifications. A similar requirement exists in the materials area. Whilst I would like to confine my remarks to data on electronic components the pilot system is being designed to incorporate data on materials also, and will be capable of ready extension to include other data sets.

ESRO designers have found that the lack of adequate reliability data on electronic components, particularly components produced by European manufacturers, seriously affects activities in the field of satellite design. During the design phase components have to be selected in accordance with the satellite mission requirements. At present the data on European components are inhomogeneous, incomplete and dispersed so that selection is greatly impeded. This implies not only additional expenses for testing but also encourages designers to favour the use of more and better advertised American products, as the project design stages cannot be prolonged too far. ESTEC itself generates such data as a result of the environmental testing programme and through the agency of organizations carrying out similar work under contract. Data are also received from such bodies as the Military Electronics Laboratory, Sweden, the Commission d'Homologation du CCT, France, and many other approved testing organizations. The data from these varied sources arrives in as many different formats and the test conditions are by no means standardized. The proposal that SDS is examining is for the creation of a data bank which would contain all this quality and reliability data for European electronic components. The project will involve the generation of common formats for the reporting and presentation of these data, in addition to the problems of compressing the data into an acceptable amount of backing store, and designing the files for rapid access. In examining the problems involved a further requirement became obvious, this is the need for the data bank to contain a basic level of manufacturers' catalogue data for all European electronic components, not only those for which space-qualification has been granted or for which a body of test data exists.

Access to the data will be possible by conventional batch processing which will provide for the generation of selective dissemination notices presenting detailed information on each component selected, and for search queries to be processed against the entire data bank. In addition a remote on-line interactive interrogation system will be implemented utilizing the same peripheral equipment as NASA-RECON. The input, display and print-out of graphical data is being examined and will be incorporated at an early date. A third mode of operation is possible which it is anticipated will be used extensively not only by SDS documentalists but also by scientific and technical staff when copious output is expected. This is intermediate between batch-mode and on-line interactive mode and is a form of remote batch entry; profiles or search queries will be defined using the terminal and then stored for later processing in the batch stream on a priority system.

We are fortunate in having access to a special output device in addition to the more usual line-printer. This is the Stromberg–Carlson 4060 Data Recording System which outputs alpha-numeric and graphic data on to microfilm or hard-copy paper. Upper/lower case, numerics, and thirty-four special symbols in four character sizes are displayed on a CRT. Other special characters can be created by programming and high-quality, high-speed output is anticipated.

The contract for the feasibility study for the data bank has been placed with Leasco Systems and Research Company Limited, London. Sufficient work has already been done to demonstrate that such a project is technically feasible, that the backing storage requirements are not excessive and that the cost should be well justified.

The system as I have described it is entirely domestic to ESRO, but quite early on in the examination of the problems by SDS it became obvious that such a data bank, if created, would be potentially very valuable not simply to the Organization but to the entire European electronics industry. We feel that such a data bank should be exploited by offering a variety of services to subscribers in Europe, rather than allow the data to remain mainly passive. Any subscription income would help to offset the cost of creation and maintenance of the data bank, to the extent that we were able to offer a service which was found useful.

In the European product information service which we currently envisage we would hope to provide at first, say fortnightly current awareness notifications of newly introduced products in considerable detail, later with quarterly and annual cumulative specific catalogues, i.e. specific to the CAS profile. All would be in a high quality print and layout. We would aim to offer, as soon as possible, complete European market coverage on the data bank so that a search processed against the entire data set would give a state-of-the-market survey. On-line access could yield a return of telex/telephone service for on-the-spot requests. Later services we have in mind are the provision of copies of the tapes and, as with the NASA file, the establishment of data-links which would enable direct access to the ESRO data bank via national centres in the member states.

THE CZECHOSLOVAK SCIENTIFIC AND TECHNICAL LIBRARY SERVICES

A STUDY MADE DURING A CULTURAL EXCHANGE PROGRAMME

GORDON H. WRIGHT
County Technical Librarian of Hertfordshire

Paper presented at an Evening Meeting, Wednesday 28th May 1969

MY first visit to Czechoslovakia in May last year coincided with the evolvement of their ideas for a more nationally orientated communist state with more freedom to criticize its administration on policy decisions. It was a stimulating visit, and one which I shall always remember as a glimpse of the courage, endurance, patience and intelligence of a civilized, cultural populace groping back towards the control of their own destiny. My visit earlier this year saddened me.

In such a short time, encompassing a variety of visits, a multitude of people, and in an environment governed by an economy vastly different from our own, to try to give to you a coherent discourse on the pattern of library and information services is wellnigh impossible. In any case, whatever I say may well be outdated in the changes and reverses that are occurring in government departments. Nevertheless there are some visible areas in the national pattern and many projects where the work undertaken by our professional colleagues, in spite of considerable difficulties, has interesting potential.

One factor that leads to confusion for the foreigner, if not to the nationals, is the virtual duplication of posts and services which exists to meet the needs of both the Czechs and the Slovaks. Indeed, in discussions over there I could not refrain from comparing the problems of England, Scotland and Wales. On the other hand, it is probably one of the saving graces of the scheme that by providing for the need of two peoples there is healthy competition between them both.

Their present system has been painfully evolved. In 1937 there were only about forty state-run and industrial research units. Much of industry was based on foreign capital, with the result that they relied on foreign research. Only the larger industrial organizations, such as Bata and Skoda, possessed information units. The war years did not help, for the universities were closed and academic staff largely persecuted. Indeed, organizations for research and development did not emerge on a large scale much before 1950 and then primarily for research.

During 1950–51 research workers and research groups from universities and industry were gradually brought together, so that by 1st July 1950 seven research institutes were formed for fundamental work in mathematics, physics, biology, chemistry, polarography, astronomy and geology. These subsequently formed the basis for the formation of the Czechoslovak Academy of Sciences (CSAV) in 1952, followed a year later by the formation of the Slovak Academy of Sciences (SAV). Today CSAV has 137 and SAV 54 research institutes.

At about the same time the first major information centre was established, the Documentation Centre of the Centre for Research and Development which was to be primarily concerned with the establishment of information centres in industrial plants. According to the Czechs, the central control exerted by this organization particularly in co-ordinating the work of the information units undoubtedly benefited the national economy.

The national budget at this time was about 153 billion crowns, of which approximately 4 billion was allocated to science research and development and 100 million of this was allocated to the CSAV (the Academy). The foremost function of the Academy was and is to promote the planned development of science and to carry on research which will contribute to the well-being and advancement of the state.

Each of the institutes controlled by CSAV and the SAV have their own information services but all are co-ordinated by the Information Service centrally maintained by the Academy.

As the Academy was primarily concerned with research, the development activity during the period 1951 to 1960 which was not centrally organized did not progress at the same pace.

Similarly, in the information area the original Documentation Centre serving primarily industrial needs was not able to maintain adequate management controls. In 1959 the State Committee for Technology (then the State Committee for Development of Technology) decided that a new centre should be established for Technical and Economic Information. A government decree No. 606/1959 established this body, but as it was limited to technology, leaving basic research to the CSAV, it was still inadequate for a uniform information service.

Meanwhile, the libraries of the Technological Universities in Prague, Brno and Bratislava were being developed to provide basic technical library facilities. The various ministries were also developing libraries and information units and gradually each ministry merged its units into coherent organizations. Probably the most significant from our viewpoint are the Institute for Scientific and Technical Information and Central Agricultural and Forestry Library; and the State Institute for Medical Documentation and Library Service.

By 1962 a more definite plan began to emerge for the development of science and technology embracing the following organizations:

(*a*) The CSAV and SAV.

(*b*) The research activities of the universities or their faculties not involved in teaching.

(*c*) Research and development institutes and organizations directly controlled by ministries, other central government departments and national committees.

(*d*) Research and development institutes and organizations forming part of production enterprises which retain, however, their economic and organizational independence.

(*e*) Research and development units of enterprises and works forming a part of their organization and not independent in the same sense as institutes and organizations listed under (*d*). These include patent centres, standards, information services, testing stations, design offices and research laboratories.

(*f*) Testing and research laboratories and other central government departments.

(*g*) Institutes for technical and economic information controlled by ministries and other central government departments.

The planned organization began to take place with Act No. 55 of 9th July 1963. At the head of the organization was the State Commission for Development and Co-ordination of Science and Technology acting as a central directing and co-ordinating government agency. This later became the State Commission for Technology.

The commission was charged with responsibility for issuing regulations under the Act, directing and guiding the development of the entire structure of the network. It was responsible for long-term planning and, in this connection, co-ordinates the activities of the CSAV with central government departments and other organizations. The commission was also responsible for scientific and technical co-operation with the Eastern bloc and for co-operation with Western countries.

In addition, the commission was responsible for the Standardization Office, the Patents Office, the extension of scientific, technical and economic information services, together with the activities of the Institute for Technical and Economic Information I previously mentioned.

Whilst the development of science and technology in its various branches remained the responsibility of the appropriate ministry and central government agency, the formation of any new research and development unit either within the government or in industry must be carried out with the agreement of the commission. To facilitate this programme 175 research and development units, including industrial units, were formed, designated Branch Co-ordinating Bodies. These bodies generally represent either a branch of science or a particular aspect of technology or production.

Finance for staff and materials was and is prepared by the State Commission, which also allocates the appropriate funds to the respective government departments. These funds cover:

(*a*) research and development staff, including supporting personnel;

(*b*) fixed capital assets and maintenance;

(*c*) operating costs;

(*d*) foreign exchange.

In order to facilitate control of these affairs for the development of information units the Centre for Scientific, Technical and Economic Information (UVTEI) was established on 1st April 1966 as a body subordinate to the commission for nation-wide management and control of activities in the field of scientific, technical and economic information. This task incorporates research and dissemination. The principal technical library serving this centre is the State Central Technical Library in the Klementinum at Prague, under the directorship of Dr Antonin Derfl; though the State Technical Library in Brno, under the directorship of Ing. V. Gotz, and the Slovak Central Technical Library in Bratislava, under the directorship of Ing. L. Ziak, are partners in the network and were all formed from libraries serving technological universities.

Each of these libraries is responsible for training appropriate personnel particularly for industrial libraries, ensuring adequate provision of technical and scientific literature from abroad; disseminating bibliographical data and abstracts of technical and scientific publications; recording translations and report literature; evaluating equipment and building needs and pursuing research into user requirements and library mechanization.

Whilst these libraries are the responsibility of the Centre for Scientific, Technical and Economic Information, they must still conform to the requirements of the Library Acts of 1959, which are controlled by the Ministry of Culture. These Acts laid the foundations for an integrated system comprising public, medical, agricultural and scientific libraries. The head of this integrated nation-wide system was, and still is, the State Library of the Czechoslovak Socialist Republic, comprising the University Library (which is the largest universal, scientific library in the country), the National Library (collecting all literature published in Czech and Slovak and about Czechoslovakia), the Slovonic Library, the Central Scientific Methodological Cabinet of Librarianship and the Central Economic Library in Prague. The State Library of the CSSR was charged with the nation-wide co-ordination of bibliographic activity in the fields of humanities and natural sciences.

Regional co-ordination of these activities in Slovakia is performed by Matica Slovenska in Martin (Slovak national bibliography), University Library in Bratislava (humanities and natural sciences), Slovak Technical Library and the Central Economic Library in Bratislava.

Thus it can be seen that there is a distinct pattern and division of responsibilities for the humanities and the technologies, with the natural sciences bridging the gap. Divergence in education is mainly between librarians and information officers for these fields and for public librarians. The former normally attain a degree and then attend a period of two years at the Chair of Librarianship and Scientific Information at the Charles University in Prague and the Comenius University in Bratislava. Public Librarians, on the other hand, are trained at the Institute of Adult Education and Journalism established as a separate faculty of the Charles University. There is also a scheme for training library assistants at vocational schools, where they study normal academic subjects plus various library administrative topics and gain practical experience by working in libraries.

As my study was confined to scientific libraries, I had little opportunity to appraise public librarianship. Nevertheless, on my last visit I spent a very interesting afternoon in a District Library for Prague and was very much reminded of the role of the British public library in pre-war days. Public libraries in Czechoslovakia are normally associated with Houses of Culture and the People's Universities for Science, Technology and Arts. These organizations normally co-ordinate all cultural programmes for adults. In Prague the programme is extensive, providing literary, musical and film evenings, special lectures and courses, discussions with writers, artists and scientists, exhibitions, marionette performances, including many specially designed for the young. On the whole one could not but be impressed with the extent and enthusiasm of those involved.

If I have any special observation to make it would be to the sparsity of English books and the need for exchange facilities for library personnel. It must be remembered that Czechoslovakia is a cultural nation which has always had ties with England. They are aware of the language barrier and the need for them to be able to understand both English and Russian is of paramount importance.

However, currency problems, amongst other things, restrict their ability to purchase English material and to travel to England and so facilitate their understanding of English. I suggest to you that exchange agreements for the purchase of English books are well worth pursuing however small the budget you may have available. Additionally, opportunities to encourage library personnel to spend a few weeks in your library would be very welcome. These arrangements need not be one-sided and I am sure that anyone who has the time to spend a month or so in Prague, Brno or Bratislava would find much of interest, both in libraries and in places of historic importance. Above all, such exchange will help to prove that isolation is the province of the professional politicians not the professional librarian who takes a broader view of humanity.

NOTE

For a more detailed appraisal of the service offered by specific libraries I refer you to my report, 'Czechoslovakia; a study of scientific and technical library services during a cultural exchange programme, 13th–27th May, 1968.' *Hertis*, Hatfield Polytechnic, Hatfield, 1968, 51. p.

Letters to the Editor

Dear Sir,

TRANSLATIONS AND THE LANGUAGE BARRIER

The Postgraduate School of Librarianship and Information Science at Sheffield University has been investigating the use of foreign language publications by research workers. Supported by a grant from the Office for Scientific and Technical Information, the eighteen-month project, now nearing completion, has covered research work being carried out in all disciplines at Sheffield University, assuming this university to be reasonably typical for Britain. We have interviewed well over 50 per cent of academic staff and research students about their language knowledge, scope of research, methods of literature searching and use of foreign language materials. Records have been collected of use inside the library (in particular, the use of current periodicals), of borrowings, xeroxing and interlibrary loans and analyses have been completed of the book and periodical stock of the libraries in Sheffield University.

A major objective of the project is to isolate the factors militating against the full use of relevant research work published in languages other than English and to assess the relative significance of these factors. One important aspect is the availability of translation services and the cost, timeliness and quality of translations made. In this respect we would be pleased to hear from librarians and information officers about their experiences in obtaining translations for research workers—their main sources for translations and the languages and subjects causing the greatest difficulties—and in particular we would welcome any practical suggestions for improving the present situation.

Yours faithfully,

PROFESSOR W. L. SAUNDERS
L. J. PARTEGER (MRS)
W. J. HUTCHINS

Postgraduate School of Librarianship,
University of Sheffield.
15th July 1969.

Dear Sir,

TECHNICAL INFORMATION WORK—AN ART OR A SCIENCE?

In the first Aslib Annual Lecture[1], Dr Batten remarked: 'We still await the Dalton of the information world.' Miss Townley[2] has suggested that this is because we have all concentrated too much on *how* to handle information, and not enough on *why* we do it. 'It will only be when we have an organized body of data about the problems they set out to solve that studies of the tools used to solve them will be of any real value.' I would like to go a little further than Miss Townley and argue that the nature of information science is such that we should not *expect* a Dalton to appear.

Miss Townley complains that we practise an art and not a science. I think the trouble is rather that we are trying to practise a *primary* science (like physics or chemistry) when the subject is really a *secondary* science (like sociology or economics). To illustrate this, let us compare the position of the information scientist with that of Isaac Newton. Newton is said to have modestly remarked that: if he had seen further than other men, it was because he had 'stood upon the shoulders of giants' (of men who had already established the basic structure of the science, as Dalton did for chemistry). I submit that in information science we cannot, and therefore should not, attempt to establish similar structures; that our work should not be based upon earlier work in the field but upon continually renewed appraisal of the ever-evolving structure of scientific *activity*. The information scientist should not try to stand upon the shoulders of his predecessors but to balance like a surf rider upon this continuously advancing wave.

The mistake of treating the secondary sciences in the same way as the primary ones is at least as old as Plato, and although the consequences have been grave we do not yet seem to have learned the lesson. Let us briefly trace how Plato and his critics went wrong in social philosophy, so that we may then try to avoid making similar mistakes in our own subject. In this context Plato is best known for his 'ideal society' described in *The Republic*. In this society, for example, family life is abolished, and children are conceived at regular 'mating festivals' and brought up in state institutions. Horrible! But Plato bases the proposal on a structure of very persuasive theoretical argument. Furthermore, he is mainly remembered as a social philosopher *only* for this theoretical society, which he described when he was a brilliant but comparatively young and inexperienced man. This preoccupation with the least realistic phase of Plato's writings has surely helped to cause many of the social and political troubles of twenty-three centuries.

The present writer, when at University, managed to complete a term's course in the philosophy of Plato (paying enough attention to pass the examination) without learning that the older and wiser Plato achieved a very much greater degree of human understanding. In *The Laws*, for example, he advocates monogamous marriage with officials rather like our marriage guidance counsellors.

My thesis is that, in the secondary sciences, the really great man is the one who, sooner or later, fully recognizes the limited applicability of any theoretical structures he might have developed, and applies his whole experience realistically to the needs of the people he serves. Furthermore, the critics of such a man should not confine their judgements to his more tightly-structured and therefore more memorable ideas.

Although some recent work indicates that the situation is improving[3, 4, 5, 6, 7] I feel that we are still concentrating too much on the study of information *systems* and too little on the real needs of information users and the overall economics of the activities which *include* technical information work—scientific research and technological development.

I believe that the reason *why* we have got our priorities wrong is that most of us were trained in the primary sciences. As a result of this we tend to concentrate our investigations on those aspects of our work which are amenable to simple quantitative evaluation but which are not necessarily the most important or fundamental.

Yours faithfully,
J. F. DRAGE

The Electricity Council,
Research Centre,
Capenhurst,
Chester,
31 July 1969

REFERENCES

1 BATTEN, W. E. The future of information work. *Aslib Proceedings,* 19, vi, 1967, p. 163–72.
2 TOWNLEY, H. M. It isn't a science. *The Information Scientist,* 1 (ii), September 1967, p. 49–50.
3 BATTEN, W. E. Information retrieval—the economic aspect. *Journal of Documentation,* 22, ii, 1966, p. 87–92.
4 DRAGE, J. F. User preferences in published indexes. A preliminary test. *The Information Scientist,* 2 (iii), November 1968 p. 111–14.
5 BATTEN, W. E. Ghillying for science—rod or net? *Aslib Proceedings,* 20, iii, 1968, p. 157–61.
6 BATTEN, W. E. We know the enemy—do we know our friends? The sociological place of information and the problems obstructing its progress. *Library Journal,* 93 (v), March 1968, p. 945–7.
7 CULLEY, H. J. Analytical abstracts: user reaction study. *Proceedings of the Society for Analytical Chemistry,* 5 (xi), 1968, p. 217–21.

Dear Sir,

ASSESSMENT OF INFORMATION SERVICES

We should like to take up some of the points raised by Dr Davison (*Aslib Proceedings,* July 1969). We shall deal mainly with current awareness, since this is the field where the computer-based systems might be expected to yield greatest immediate benefit.

In addition to supporting experiments with large-scale computer-based services, OSTI has been supporting experimental specialized information centres. One of these operates in the University of Sheffield. During the last three years an information service in Intestinal Absorption has been built up, and one of its main functions has been the evaluation of the computer-based services. Records have been kept for each reference on this subject, showing the date when each reference appeared in our monthly bulletin. The appearance of each reference in (*a*) fifty core journals, (*b*) ASCA, (*c*) Chemical Titles (CT), (*d*) CBAC, (*e*) *Index Medicus* or monthly MEDLARS search, (*f*)other sources, was also recorded. The results of an initial study have been published. (Barkla, 1969.) Even though 'manual' scanning was backed by scanning of appropriate headings in *Index Medicus,* computer searches of ASCA, CBAC and CT each added 5 to 10 per cent of the collection, in references not seen in any other source within six months of first sighting.

Dr Davison's figures seem to indicate that papers on his subject are intrinsically more difficult to locate than ours. It is known that the effectiveness of a source may vary widely from one search to another, and one might wish to see careful comparative investigations of the cost and effectiveness of systems in a larger number of cases.

Another important aspect of this question is the effect of increased experience and improved technique on the apparent effectiveness of computer search. Figures showing our results from January to May 1969 are given below,* with figures from the previous investigation in parentheses. They show some improvement in the performance of CT. We hope to continue to investigate methods of profile construction in the next few years. We will adapt our profiles to make the best use of each system, e.g. in ASCA, citations are cheap and in CT no extra charge is made for additional words in the profile, up to fifty.

In a separate investigation we found that 67 per cent of 1,950 references in our bulletin were from fifty core journals. Some references were missed during 'manual' scanning, but the number is very small at present. Recall of papers on our special topic published two years ago reaches nearly 90 per cent in *Index Medicus,* but is only about 50 per cent for papers published one year ago. ASCA compared well, as a retrieval system, yielding over 80 per cent of the papers on this topic from journals which are covered within a few weeks of publication.

In our case the cheapest method of collecting 90 per cent of the references is to scan *Index Medicus.* If the time-lag is to be reduced, more expensive methods must be used. If the extra expenditure is limited to £50 our best method would be to scan eighty to one hundred journals. If £200 is the limit it might still be best to scan journals if the core of four hundred journals could be identified. In our case this is not possible—the number of references from the journal ranked in the 400th place would be less than one per annum, and editorial policy, etc., may change in the time needed to identify journals which are of continuing value to us. For our group of subscribers (350 at present) £200 is a reasonable sum to spend on collecting references, and our best policy is probably to spend up to £150 on computer search by ASCA, CT, CBAC, etc.

For individual scientists the problem is more difficult. The cost of missing perhaps 40 per cent of relevant references for six to twelve months needs further investigation, but the demand for current awareness services is limited by shortage of funds, particularly in universities, and by the availability of information by verbal communication and use of core journals. In the Students Chemical Information Project, supported by OSTI, it was found that 70 per cent of the participants continued to scan current awareness publications and 96 per cent continued to scan primary publications when provided with computer-based SDI (Callaghan, *et al.,* 1969). Personal scanning for ideas and facts which are not related to any particular work in hand is probably very important to some scientists. We envisage that computer services will be of greatest value to scientists in the indirect way Dr Davison hints at, i.e. in the production of specialized secondary publications. The cost per head could be in the range

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*See Tables 1 and 2 on pages 370–71.

£3 to £6 per annum, if based on a single profile and distributed to about 50 users. For a larger number of users it will become economical to use a combination of computer searches and journal scanning, and to add abstracts and indexes.

Considering, however, that a severe shortage of specialist information staff is likely to prevail in British universities, we are applying for support to develop a number of information services which will make maximum use of computers and minimum use of skilled staff. During the next three years we intend to provide a series of current awareness bulletins mainly in the field of cell membranes (active transport and permeability). These will mainly rely on edited output from ASCA, etc. In the same fields we shall provide annual indexed bibliographies based on MEDLARS. The bulletins will provide support to the individual scientist's scanning of core journals and/or to his personal indexing system. This approach can be applied by individual scientists who feel they would benefit from computer searches but cannot afford them for their own personal use. We intend to encourage this trend in Sheffield University, and suggest that information officers in other universities could do likewise.

Yours faithfully,
J. K. BARKLA
MISS L. THOMPSON

Biomedical Information Project,
Physiology Department and Postgraduate School of Librarianship and Information Science,
The University,
Sheffield S10 2 TN.
8th August 1969.

REFERENCES

BARKLA, J. K. The University of Sheffield Biomedical Information Project, *Information Scientist,* 3 (i), 1969, p. 13–30.

CALLAGHAN, A., CANNON, T. H., HERBERT, E. J., LEE, C. M., LEGGATE, P., *and* POUSTIE, M. Students Chemical Information Project Final Report, Part II, June 1969. (Available from OSTI.)

TABLE 1. *Effectiveness of current awareness sources*

(*i*) Coverage of references in 'Intestinal Absorption' bulletins, January-May 1969

Source	*Total contents of bulletin*		*Special topic,*[1] *references from:*			
			(*i*) *All journals*		(*ii*) *Journals covered by ASCA and CT*	
Fifty core journals	$\frac{309}{520}$	60%	$\frac{28}{38}$	73% (60%)[3]		
ASCA	$\frac{306}{520}$	59%	$\frac{29}{38}$	75% (77%)[3]	$\frac{43}{53}$	81%[2] (96%)
CT	$\frac{86}{520}$	28%	$\frac{19}{38}$	50% (30%)[3]	$\frac{33}{53}$	62%[2] (56%)
Index Medicus MEDLARS	$\frac{126}{520}$	24.5%	$\frac{14}{38}$	37%		

1 Measurements in vitro of absorption by intestine of sugars, amino acids, monovalent ions and water.

2 Special topic extended to measurements *in vivo*.

3 Barkla, 1969.

Precision was similar to that obtained in the previous experiments. In ASCA and CT precision was about 30 per cent with respect to total contents.

Each profile (ASCA and CT) cost about £70 per annum. Scanning journals cost about £30 per annum, based on a salary of £1,300 per annum plus 50 per cent overheads, and excluding journal subscriptions.

TABLE 2. *Effectiveness of current awareness sources*

(*ii*) Reduction of delay in collecting references

Source	*First Sighting*	*Sole Sighting, after:*			
		2-7 *months*	7-10 *months*		10-19 *months*
Fifty core journals	38%	17%	13%	17%	16%
ASCA	39%	12.5%	12%	9%	8.5%
CT	11%	4.5%	3%	5%	1.3%
Index Medicus MEDLARS	3.5%	3.3%	12%	4%	9%
CBAC	—	—	2%	6%	2%
Total %	91.5%	37.3%	42%	41%	36.8%
No. of references in sample	520	520	250	300	837
Period covered	Jan.-May 1969	Jan.-May 1969	Oct.-Dec. 1968	Jan.-Mar. 1968	Jan.-Sep. 1968

Three different groups of references collected during different periods were examined Each source provided a number of references which would not otherwise have been seen for some months after first sighting. Sole sighting figures in Table 2 are percentages of the total references collected in the periods two to seven months, seven to ten months and ten to nineteen months after first sighting, and are therefore composite figures based on the number of references not seen elsewhere by the end of July 1969. Figures for January to March 1968 are given for comparison (Barkla, 1969).

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

Items are available in the Aslib Library and may be borrowed unless marked to indicate reference copies.*

User Studies

TRUESWELL, RICHARD W.
User circulation satisfaction vs. size of holdings at three academic libraries.
College and Research Libraries, vol.30, no.3, May 1969, p.204–13.

LEWIS, MARY GENEVIEVE
Library orientation for Asian college students.
College and Research Libraries, vol.30, no.3, May 1969, p.267–72

SZEPESVÁRY, TAMÁS
A müszaki-gazdasági információk felhasználóinak oktatása—egy szimpózium tanulságai.
Tudományos és Muszaki Tájékoztatás, vol.16, no.5, May 1969, p.361–8.
Training users of technical and economic information.

Library Systems

GREAT BRITAIN. Department of Education and Science
Report of the National Libraries Committee, chairman F.S. Dainton. London, HMSO, June 1969. SBN 10 140280 5.
319 p., tables. (Cmnd. 4028.)

KIM, CHIN
A new national library: the National Diet Library of Japan.
Journal of Library History, vol.4, no.3, July 1969, p.225–38.

KAEGBEIN, P.
The Technological University Library in Berlin.
IATUL Proceedings, vol.3, no.3, December 1968, p.83–8.

Administration and Management

EYSSEN, JURGEN
Neue schwedische Buchereien.
Dokumentation, Fachbibliothek, Werksbücherei, vol.17, no.5, June/July 1969, p.138–69.
Photographs and plans of recent Swedish library buildings.

KLUTH, ROLF
Bibliotheken in neuen Universitaten
Libri, vol.18, no.3–4, 1969, p.262–9.

JAY, PETER
Library lighting. Information sheet. Electric lighting 10.
Architects' Journal, vol.149, no.29, 16 July 1969, p.129–31.
Recommended standards and notes on the design of lighting in libraries

HARO, ROBERT P.
Some problems in the conversion of a college to a university library.
College and Research Libraries, vol.30, no.3, May 1969, p.260–4.

SURACE, CECILY J.
The human side of libraries. Santa Monica, Calif., Rand Corporation, January 1969
16 p. (AD 681 114.)
1 microfiche.

CAIN, STITH M.
Service hours in selected academic libraries
College and Research Libraries, vol 30, no.3, May 1969, p.265–6
Survey of 43 American university libraries.

WORK simplification in Danish public libraries. The report of the Work Simplification Committee of the Danish Library Association, by Henning Gimbel, translated by Rudolph C. Ellsworth. Chicago, American Library Association, 1969. SBN 8389-3094-8 (1969).
xiii, 25 p. (LTP Publication no.15.)

HOPPE, RONALD A., *and* SIMMEL, EDWARD C.
Book tearing and the bystander in the university library.
College and Research Libraries, vol.30, no.3, May 1969, p.247–51.

PAZERA, E. A.
Circulation of periodicals.
O & M Bulletin, vol.24, no.2, May 1969, p.100–5.
A speedier method of circulating journals at the Central O and M Unit, Department of Health and Social Security, England.

MULLER, GUNTER
Zur Problematik der Restaurierung und Konservierung wertvoller Bücher. . . .
Zentralblatt für Bibliothekswesen, vol.83, no.5, May 1969, p.301–8.
Mass restoration projects are now necessary to preserve valuable books for future centuries.

ASH, JOAN
The exchange of academic dissertations.
College and Research Libraries, vol.30, no.3, May 1969, p.237–41.

Printing and Publishing

GROSHEIDE, D.
Bibliotheek en boeknummer.
Open, vol.1, no.6, June 1969, p.353–6.
Problems confronting libraries, regarding book-number systems.

ZENTRALSTELLE FÜR MASCHINELLE DOKUMENTATION
Standard-Serien-Nummern (SSN) Beispiele aus der deutschen Liste. Berlin, Beuth-Vertrieb GMBH, 1969.
10 p. (ZMD-A-20).
Presents some entries from the German list of Standard Serial Numbers with examples of format for recording periodicals.

VICKERY, B. C.
Indicators of the use of periodicals.
Journal of Librarianship, vol.1, no.3, July 1969, p.170–82.
Discussion of five indicators applied to British science and technology periodicals, and the bias in each.

ROBERTS, MATT
Copyright and photocopying: an experiment in co-operation.
College and Research Libraries, vol.30, no.3, May 1969, p.222–9.
Argument that US libraries have an obligation to provide copies for 'fair use'.

BRITISH STANDARDS INSTITUTION
Recommendations for the measurement of the folding endurance of paper. Metric units.
London, the Institution, 1969.
11 p. (BS 4419:1969.)

BARROW, W. J., RESEARCH LABORATORY INC.
Performance/durability of the book—VI Spot testing for unstable modern book and record papers. Richmond, Va., the Laboratory, 1969.
28 p., tables, bibliog, (Publication no.6.)

Reprography

DOCUMENT reproduction survey.
FID News Bulletin, vol 19, no 6, 15 June 1969, p.59–62.

INTERNATIONALE KONGRESS FUR REPROGRAPHIE, 2nd, Koln, 25th–31st October 1967
Reprographie II: bericht uber den II. Internationalen Kongress fur Reprographie . . . ; herausgegeben von Othmar Helwich. Darmstadt, Othmar Helwich, 1969.
xv, 341 p.

KOSTENVERGLEICH. Kopie/Vervielfaltigung.
Reprographie, vol.9, no.6, June 1969, p.172–3.
Graphical comparison of costs of reproduction for 10, 25, 50 and 100 copies by five different methods.

LAWANI, S. M.
Storage and preservation of microfilm under tropical conditions.
Libri, vol.18, no.3–4, 1969, p.182–90.
29 references.

TURNER, D. A.
The legal standing of microfilm; report by G. H. Wright on a paper given by D. A. Turner, 25th February 1969.
NRCd Bulletin, vol.2, no.3, Summer 1969, p.4–8.

Subject Organisation

PIRÓG, WOJCIECH
A vallalati belso es kulso információk áramlása.
Tudományos és Muszaki Tajékoztatás, vol.16, no.5, May 1969, p.348–60.
Flow of internal and external information in industrial companies.

PEARSON, KARL MAURICE
Statistical data collections in university research libraries.
Information Storage and Retrieval, vol.5, no.2, July 1969, p.59–67.

BALÁZS, JÁNOS
A hazai fizikai szakolyoirat-ellatottsag vizsgalatanak nehany tanulsaga.
Tudományos és Muszaki Tájékoztatás, vol.16, no.5, May 1969, p 327–47.
Survey of availability of physics journals in Hungary.

CRAIG, J. E. G.
Characteristics of use of geology literature.
College and Research Libraries, vol.30, no.3, May 1969, p.230–6.
Citation analysis of ten geological journals.

CHAKRABORTY, A. R.
Geological Survey of India library: a profile.
IASLIC Bulletin, vol.13, no.4, December 1968, p.283–8.

DEWS, J. D., *and* FORD, MONICA
An investigation into existing documentation services in business studies. A report submitted to OSTI. Manchester, Manchester Business School, January 1969.
143 p , tables.

CLAVEL, J.-P., *and* PERRET, L.-D.
La musique a la BCU de Lausanne.
Nachrichten - Nouvelles - Notizie, vol.45, no.3, 1969, p.57–64.
Card catalogue of the music collection at the Bibliothèque Cantonale et Universitaire de Lausanne.

VAN DER POT, C. W.
Het muzikale labyrint of. wie het heeft mag het sturen.
Open, vol.1, no.6, June 1969, p 370–3.
Music libraries and co-operation in the Netherlands

Mechanization

CORDELL, S. J.
Choosing and using office equipment. London, Cassell, 1969.
x, 141 p., illus.

CUADRA, CARLOS A.
Libraries and technological forces affecting them.
ALA Bulletin, vol.63, no.6, June 1969, p.759–68.
Computers, microforms, data processing, audio-visual media, facsimile transmission.

TAYLOR, LARRY D.
The computer and theological materials.
College and Research Libraries, vol.30, no.3, May 1969, p.252–9.
Concordance and index production, authorship determination, archaeology, machine translation.

BRITISH NATIONAL BIBLIOGRAPHY
Marc II. Specifications (March 1969). [London] Council of the British National Bibliography, April 1969. SBN 900220 11 2.
52 p. (BNB Marc Documentation Service Publications no.2)

EVANS, A. J., *and others*
Periodicals data automation project. Loughborough, Loughborough University of Technology, 1969.
38 p. illus. (LUT/LIB/R4.)

JAPAN INFORMATION CENTER OF SCIENCE AND TECHNOLOGY
The JICST computer system. Tokyo, the Center, May 1969.
19 p.

Classification and Cataloguing

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th International edition. UDC 330 Economics. London, the Institution, 1969.
13 p. (BS 1000 [330] 1969. FID Publication no.179.)

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th International edition. UDC 333 Land and landed property. London, the Institution, 1969.
9 p. (BS 1000 [333]. 1969. FID Publication no.179)

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th International edition. UDC 334 Co-operation. London, the Institution, 1969.
11 p. (BS 1000 [334]: 1969. FID Publication no.179.)

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th International edition. UDC 335 Socialism. London, the Institution, 1969.
9 p. (BS 1000 [335]: 1969. FID Publication no.179.)

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th International edition. UDC 337 Customs policy. London, the Institution, 1969.
8 p. (BS 1000 [337]: 1969. FID Publication no.179.)

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th International edition. UDC 38/382 Trade. Commerce. London, the Institution, 1969.
15 p. (BS 1000 [382]: 1969. FID Publication no.179.)

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full ed. 4th International edition. UDC 654 Telecommunication services: organization, administration and operation. London, the Institution, 1969.
12 p. (BS 1000 [654]: 1969. FID Publication no.179.)

FEDERATION INTERNATIONALE DE DOCUMENTATION
UDC revision and publication procedure; [4th ed]. The Hague, the Federation, 1968.
53 p. (FID 429.)

VAN DRIEL, J.
Nederland in de UDC.
Open, vol.1, no.6, June 1969, p.378–81.
The PTT plan for a postal-coding system could be introduced into UDC.

FILL, KARL
Ist die Dezimalklassifikation noch zeitgemass?
DK-Mitteilungen, vol.14, no.2, March 1969, p.7–9.

FREEMAN, ROBERT R., *and* ATHERTON, PAULINE
Final report of the research project for the evaluation of the UDC as the indexing language for a mechanized reference retrieval system. AIP/UDC—9. New York, American Institute of Physics, May 1969.
35 p. (PB 182083).
1 microfiche.

CORBETT, LINDSAY
Report on the FID seminar on UDC in a mechanized retrieval system; held at the Danish Technical University, Copenhagen, 2–6 September 1968. Aldermaston, United Kingdom Atomic Energy Authority, 1968. (AWRE Library Information Note, no.68/9.)

NEELAMEGHAN, A., *and* VENKATARAMAN, S.
Formulation of kernel terms for a subject and isolate terms for a classification schedule for use in the synthesis of class number by computer. (Non-conventional methods in document retrieval 9)
Library Science with a Slant to Documentation, vol.6, no.1, March 1969, p.71–93.

ROBERTS, NORMAN
An examination of the personality concept

and its relevance to the Colon classification scheme.
Journal of Librarianship, vol.1, no.3, July 1969, p.131–48

RANGANATHAN, S. R., *and* GOPINATH, M. A.
Development in the use of digits in Colon classification. (Classification problems 31.)
Library Science with a Slant to Documentation, vol.6, no.1, March 1969, p.1–39.

BHATTACHARYYA, G.
Vital role of depth classification in a system for document finding: a trend report.
Library Science with a Slant to Documentation, vol.6, no.1, March 1969, p.52–70.

DE SARKAR, B. K., *and* THAKUR, R. L
Classification scheme for documentation of literature on glass and ceramics.
IASLIC Bulletin, vol.13, no.4, December 1968, p.259–68.
Scope of UDC, BGIRA and DEC (Documentation—Europeanne Ceramique) and improvement of DEC.

LUDDEN, BENNET
The dance classification system of the Juillard School Library.
Theatre Documentation, vol.1, no.1, Fall 1968, p.21–9.
Classification scheme, based on Library of Congress system section for dance materials which was found to be inadequate at the Juilliard School.

PERREAULT, JEAN M.
Emendations to the relation-schema.
College Park, Md., Maryland University, School of Library Services, 1968.
8 p. (PB 179 806.)
1 microfiche.

AUSTIN, DEREK
Prospects for a new general classification
Journal of Librarianship, vol.1, no.3, July 1969, p.149–69.
Based on a lecture to the Cataloguing and Indexing Group of the L A , Birmingham, 20th February 1969.

GORISCH, R.
Die Klassifikation als Element der Methodologie der Wissenschaft. . . .
Mitteilungen fur Medizinisches Bibliothekswesen, vol.3, no.2, 1969, p.40–3

BARNHOLDT, B.
A computer-based system for production of a UDC-classed library catalog at the Technological University Library of Denmark.
Libri, vol.18, no.3–4, 1969, p.191–6.

RANGANATHAN, S. R., *and* BHATTACHARYYA, G.
Conflict of authorship: person vs. person. (Cataloguing problems 6.) (Comparison of CCC and ALA 4.)
Library Science with a Slant to Documentation, vol.6. no.1, March 1969, p.39–51.

LIBRARY ASSOCIATION. Cataloguing and Indexing Group
Seminar on the Anglo-American cataloguing rules (1967). . . edited by J. C. Downing and N. F. Sharp. London, the Association, 1969. SBN: 85365 271 6.
xii, 104 p.

Language and Indexing

VERNIMB, CARLO
Die Bedeutung des Thesaurus fur das Retrieval.
Nachrichten für Dokumentation, vol.20, no.3, June 1969, p.128–34.
Necessity of a thesaurus as a means of retrieval and rules for its compilation.

GUÉNIOT, YVONNE, *and* LAUREILHE, MARIE-THÉRÈSE
De quelques thesauri.
Bulletin des Bibliothèques de France, vol.14, no 5, May 1969, p.181–202.
Survey of thesauri in the humanities and sciences.

LAUREILHE, MARIE-THÉRÈSE
Essai de bibliographie des thesauri et index par matières parus depuis 1960 (au Ier mars 1969).
Bulletin des Bibliothèques de France, vol.14, no.5, May 1969, p.203–18.
Bibliography of thesauri issued since 1960.

ENGELMANN, GERHARD
Alexander von Humboldt uber das Registermachen.
Zentralblatt fur Bibliothekswesen, vol.83, no.5, May 1969, p.275–82.
Alexander von Humboldt's principles of compiling indexes.

MARON, M. E., *and* SHOFFNER, R. M.
The study of context: an overview.
[Berkeley], Calif, University of California, Institute of Library Research, January 1969.
ii, 23 p

BÁTORI, ISTVÁN
Automatische Textanalyse fur die maschinelle Informationsverarbeitung.
Nachrichten fur Dokumentation, vol.20, no.3, June 1969, p 123–7

ARTANDI, SUSAN, *and* BAXENDALE, STANLEY
Project MEDICO: third progress report.
New Brunswick, NJ, Rutgers University, Graduate School of Librarianship, 1969.
v, 75 p.

ZHDANOVA, G. S., *and others*
Russko-anglo-frantsuzskii terminologicheskii slovar' po informatsionnoi teorii i praktike. Moscow, Izdatel'stvo 'Nauka', 1968.
239 p., bibliog.

WERSIG, GERNOT
Versuche zur Terminologie in der Dokumentation 1: Sprache.
Nachrichten fur Dokumentation, vol.20, no.3, June 1969, p.116–23.
Proposals for the definition of basic documentation terms.

STANISZEWSKI, ZBIGNIEW, *and* WDOWCZYK, BARBARA
Kartoteka tłumaczy na kartach obrzeżnie perforowanych.
Aktualne Problemy Informacji i Dokumentacji, vol.14, no.2, March–April 1969, p.26–30.
Edge-punched card index for specialist translators.

PICKFORD, A. G. A.
80–column cards as feature cards.
Information Scientist, vol.3, no.2, July 1969, p.69–79.
Characteristics and use of these cards, of interest for a cheap, simple feature card index. By-product of work on project FAIR.

BROWN, GEORGE H.
Providing communication experience in programed foreign language instruction. Alexandria, Va., George Washington University, Human Resources Research Office, November 1968
6 p. (AD 679 916.)
1 microfiche.

Information Processing and Systems

ŻUREK, JANUSZ
O pewnych mierzalnych wskaźnikach sprawności służby informacyjnej.
Aktualne Problemy Informacji i Dokumentacji, vol.14, no.2, March-April 1969, p.1–8.
Development of quantitative formulae to measure the effectiveness of an information service.

KENT, ALLEN
'Attrition' in information dissemination relationships with industry. Pittsburgh, Pa., University of Pittsburgh, 1968.
43 p. (N 69–14131)
1 microfiche.

SKOV, HELGE J.
An electronic SDI service for Danish chemical industry and research.
Libri, vol.18, no.3–4, p.204–15.

MONGAR, P. E.
International co-operation in abstracting services for road engineering.
Information Scientist, vol.3, no.2, July 1969, p.51–62.
The International Road Research Documentation scheme, pooling abstracts for computer searching and SDI services at the Road Research Laboratory

SCHUTZSACK, UDO
Organisation, Arbeitsteilung und Computereinsatz beim Referateorgan Food Science and Technology Abstracts (FSTA).
Nachrichten fur Dokumentation, vol.20, no.3, June 1969, p.108–15.
Organization, processing and computerization of the new abstract journal.

WALLIN, BETH D., *and* MATHER, FRANCES
Classification and retrieval of nutrition information.
Journal of the American Dietetic Association, vol.54, no.3, March 1969, p.194–7.
A computer-based retrieval system for handling the reference section of the Nutrition Unit at the University of Michigan School of Public Health is described.

REICHARDT, GUNTHER
Moderne Methoden der Informationsvermittlung, besonders auf den Gebieten der Kerntechnik.
Nachrichten fur Dokumentation, vol.20, no.3, June 1969, p.102–7.
Review of modern information practices used in USA—USSR compared with older techniques in West Germany.

SAGER, D. J.
Reference: a programmed instruction prepared... for library personnel without library degrees. Columbus, Ohio, Ohio Library Foundation, 1968.
147 p.

Communication and Knowledge

INSTITUTE OF INFORMATION SCIENTISTS. Northern Branch
The value of technical information to national and industrial economic development in Britain. Manchester, the Branch, May 1969.
62 p.
Report of a conference held at Liverpool, 3rd March 1969

SCIENTIFIC and technical communication—a pressing national problem and recommendations for its solution. Washington, D.C., National Academy of Sciences—National Academy of Engineering, 1969
30 p.

REPORT of the 3rd session of the ICSU–Unesco central committee to study the feasibility of a World Science Information System Paris, Unesco, January 1969
12 p. (ICSU-UNESCO/CSI/4.10.)

MCBIRNEY, WARREN B.
Relationship between response to SDI and salary level. Denver, Colo., Bureau of Reclamation, January 1969
16 p. (PB 182 076)
1 microfiche

Professional Activity

HOUGHTON, BERNARD, *ed.*
Standardization for documentation. London, Bingley, 1969.
93 p.

HORN, ANDREW H.
A separate degree program in information science: the degree 'Master of Science' in Information Science at UCLA.
Libri, vol.18, no.3–4, 1969, p.283–311.

DUDLEY, EDWARD, *and others*
Recruitment and training by Edward Dudley, L. V. Paulin and R. S. G. Cook, *Library Association Record* vol.71, no.6, June 1969, p.172–9.
Growth of schools of librarianship during 1964–8, problems of overproduction of librarians, of non-graduate librarians, and of the integration of theoretical and practical work.

THIEDE, EDITH
Qualifizierungslehrgang für nichtausgebildete Bibliotheksmitarbeiter an der Medizinischen Akademie Magdeburg.
Mitteilungen für Medizinisches Bibliothekswesen, vol.3, no.2, 1969, p.34–7.

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TECHNICAL SWEDISH, DANISH, NORWEGIAN translated by J.T. Craddock, B COM, FIL, Ekard, Ray Park Avenue, Maidenhead, Berks. Maidenhead 24931.

RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineering. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

JAPANESE/ENGLISH. RUSSIAN/ENGLISH translations. Chemistry, medicine, biology, zoology D A Fraser, BA, 22 Gresley Road, London N19. Tel.: 01-272 5664.

WILFRED E. GOODAY, ARSM, DIC, C.LNG, MIMM, FIL. Member of Translators' Guild, Romanian and French. 161 Rivermead Court, London SW6. RENown 1912.

MEDICAL, PHARMACEUTICAL, BIOLOGICAL translations from French, Romanian and Portuguese into English and from English into French and Romanian. Dr J. Jacobson, 94 Temple Fortune Lane, NW11. 01-455 1010.

TECHNICAL TRANSLATIONS from Russian, German and Polish into English. B. Klipstein, B SC(HONS), 1 Glenview Grove, Shipley, Yorkshire. Tel. Shipley 58215.

TECHNICAL AND COMMERCIAL translations from English into Russian. Mrs. O. Linsley, 31 Parke Road, Barnes, London SW13. Tel. 01-748 8822.

TECHNICAL TRANSLATIONS from Japanese into English. R. A. Scutt, BA, 48 Somerset Avenue, West Wimbledon, London SW20. Tel. WIMbledon 1713 (01-946 1713).

RUSSIAN TO ENGLISH TRANSLATIONS. Physical sciences, all industries. Fast service. Ceramics and high temperatures specialities. Kenneth Shaw, c/o CIS Ltd, Churston End, Copythorne Road, Brixham, Devon. Tel. Brixham 3221.

TRANSLATIONS: TECHNICAL, SCIENTIFIC, all west-European languages. J. Smuts, B SC (ENGINEERING), FIL, 12 Thorndene Avenue, London N11. Tel. 01-360 7723.

TECHNICAL OR COMMERCIAL translations into/from English, German, Dutch and French. A M H Speller, FIL, NGV, 6 Lakeside, West Ealing, London W13. Tel. 01-598 1045.

TECHNICAL TRANSLATIONS in all west European languages. Electronics and other special fields. Camera copy, printing. Peter Suchodolski, FIL (ENG), 70 Greenfield Gardens, London NW2. Tel. 01-458 2239.

TECHNICAL TRANSLATIONS. Spanish, French, German, Portuguese, camera copy or printed. E. W. Sykes, FIL, 39 West Close, Wembley Park, Middlesex. Tel. 01-904 4273.

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The Patents Department of ICL — Britain's largest computer manufacturer — seeks an experienced Information Officer to be based at Letchworth, Hertfordshire.

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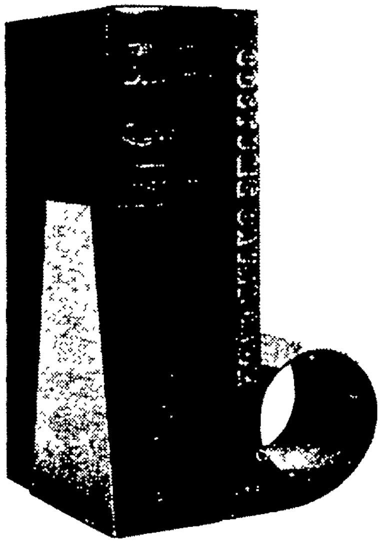

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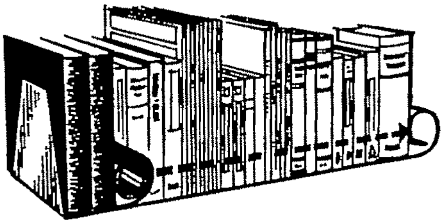

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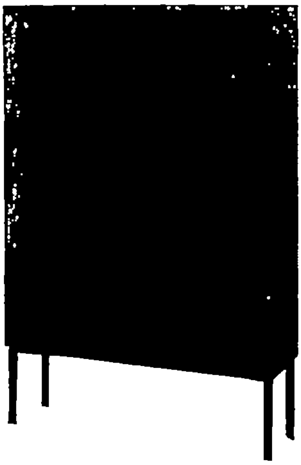

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ASLIB PROCEEDINGS

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Volume 21 **October 1969** **Number 10**

ASLIB CALENDAR 1969

October	
TUE.28–THU.30.	Aslib/Construction Industry Research and Information Association. Joint Conference at Leamington Spa. 'It pays to be informed.'
November	
THU.6.	Scottish Branch meeting. The Scottish Poisons Bureau. Speaker: Dr Henry Matthew. Royal Society Rooms, Edinburgh. 7.30 p.m.
WED.26.	Evening Meeting at Aslib. The future of scientific and technological journals. Speaker: A. A. Smailes (Iliffe Science and Technology Publications). 5 for 5.30 p.m.
December	
THU.4.	Aslib Chemical Group. Evening meeting and sherry party at Aslib. 5 p.m.
FRI.12.	Scottish Branch Cocktail Party followed by a talk: 'Some aspects of population growth.' Speaker: Dr K. L. Blaxter, FRS. Royal Society Rooms, Edinburgh. 6 p.m.
WED.17.	Aslib Christmas Party at Aslib. 5.30 p.m.

1970

January	
TUE.13.	Aslib Midlands Branch/Institute of Information Scientists. Joint meeting: Commercial Information. Speaker: G. P. Henderson. Arden Hotel, Birmingham. 6.15 p.m.
WED.21.	Evening Meeting at Aslib. Reprographic services in libraries. Speaker: T. J. Morgan (Greater London Council). 5 for 5.30 p.m.
February	
TUE.17.	Aslib Midlands Branch Meeting. Future Roles of Aslib and the LA. Speaker: D. T. Richnell. Loughborough Library School. 6.15 p.m.
WED.25.	Evening Meeting at Aslib. Facsimile transmission. Speaker: J. J. Hall (Bristol Building and Design Centre). 5 for 5.30 p.m.

Aslib 43rd Annual Conference

Approximately 275 people attended the 43rd Aslib Annual Meeting, which was held in the University of Warwick at Coventry, from 21st to 24th September 1969. The theme of the Conference was Co-operation, and speakers included C. D. Batty, Dr D. J. Urquhart, J. L. Atkins, D. T. Richnell, W. Weston, Dr D. J. Campbell, J. Leicester, Dr K. C. Ellis, Miss D. R. Dawson, Miss R. G. J. Elliot, E. Mann, and L. J. Anthony.

Sir John Wolfenden delivered his Presidential Address on 'The National Reference Library of the Future' after the Conference Dinner, at which Aslib entertained the Lord Mayor of Coventry, Alderman W. F. Burdett, and the Lady Mayoress, representatives of the University of Warwick and of the City of Coventry Libraries, Art Gallery and Museums Department, and Lord Caldecote, a Vice-President of Aslib.

Delegates visited the Warwick University Library, Coventry Cathedral, Massey-Ferguson Limited's School of Farm Mechanization at Stoneleigh, the Library of Associated Engineering Limited, Cawston, and the Coventry Reference and Technical Library together with the Lanchester College of Technology and Coventry Museum, at all of which conducted tours had been arranged.

Some of the papers given at the Conference will be published in the November issue of *Proceedings*, and others in the December issue.

Aslib Midlands Regional Office

Aslib's first regional office was opened in Birmingham at the end of September by Mr K. L. Wakelam, recently appointed Midlands Regional Liaison Officer. As reported in the May *Proceedings*, it forms part of a joint advisory and information centre established by the Construction Industry Research and Information Association, Aslib, and a number of other organizations.

The new office is intended to facilitate the provision of Aslib services to members in the Midlands and to make the advantages of Aslib membership known to those outside the Association. It will also be assisting Midlands Branch in extending its activities and acting as a liaison link with other organizations in the library and information field. With these aims in mind the Liaison Officer has commenced a programme of visits to members and others to discuss information problems and to gauge the need for new or improved services.

It is hoped that members will take full advantage of the facilities offered by the regional office. Inquiries should be addressed to:

Aslib,
The Engineering and Building Centre,
Broad Street,
Birmingham 1.
Tel.: 021-643 1914.

'The Future of Scientific and Technological Journals'

The speakers at this evening meeting at Aslib on Wednesday 26th November will be Mr A. A. Smailes, Mr M. I. Dawes, Mr K. E. Macdonald and Miss H. M. Townley, Iliffe Science and Technology Publications Ltd, and a representative from Computaprint. The subjects they will cover include information collection, keywords, thesaurus and information retrieval; methods of information storage and printing, and marketing and advertising.

Mechanized Information Storage and Retrieval Systems

The Second International Conference on Mechanized Information Storage and Retrieval Systems was held at the Cranfield College of Aeronautics on 2nd–5th September. The conference was very ably directed by Mr Cyril Cleverdon; attendance was over 200.

Twenty-five papers, an extremely rich collection, were presented; the general theme was the economic aspects of mechanized systems. A number of particular systems were described, with costs, although the terms of reference of the costs remain sadly at variance with one another. Some interesting attacks were made on the general problem of relating costs to performance and benefits. Several research projects reported were aimed at evaluating the performance of a component of a system (e.g. indexing rules), and relating this to the overall performance of the system.

The proceedings are to be published in *Information Storage and Retrieval* next year.

British Technology Index

The July issue of this current subject guide to articles in British technical periodicals represents a further stage in the mechanization of publication procedures. The clerical operations in permuting the terms in the chain indexing system used have been done by computer for some time. Now the whole text is being computer-set, which brings the advantages of greater speed (less than ten working days from the provision of edited text) and a saving of space as compared with the previous page layout. Thus, as the Editor points out in the foreword, 'processing of editorial material and typesetting have been carried out, for the first time, as an integrated computer-aided process'.

The initial data are punched on paper tape at BTI in London, the editorial data processing is done on a KDF9 computer at the Computing Laboratory of the University of Newcastle, which in association with Kynoch Press convert the computer output to enable it to drive the high-speed filmsetter, the Digiset, which produces the final page on film ready for offset printing.

The general appearance of the page, with its 7 pt (Didot) Antika, bold and roman as well as italic, is pleasant and easy to read. With a full store on magnetic tape it should now be fairly straightforward to provide an annual author index, which would be a useful addition to BTI.

UDC for animal breeding

The British Standards Institution announces the publication of the part BS 1000 (636/639) *Animal breeding. Animal produce, hunting, fishing* of the full English edition of the Universal Decimal Classification. This part also includes the schedules for products of domestic animals; the characteristics, constitution and special biological features of domestic animals. An alphabetical subject index is included.

Geo Services

Recently a fairly comprehensive service for the documentation of geology and related sciences has been launched. It consists of three publications:

1 *Geocom Bulletin*: international abstracts and current information on mathematical geoscience and computer technology. This monthly bulletin first appeared in January 1968.
2 *Geotitles Weekly*. This index lists titles of articles in periodicals, other serials, conference proceedings, etc. It is claimed that 3,000 primary geoscience publications will be covered on a regular basis and over 2,500 having occasional articles of relevance will be scanned.
3 *Geosciences Documentation*. This is a bi-monthly periodical which concerns itself with information sources and their handling. The first issue (July 1969) consists of 'a world list of current geoscience serial publications'—Geoserials 1969. A geoserial is defined as a serial publication in which a significant proportion of the content is of interest to geoscientists, taking geoscience to include geology, resource management, environment studies, and all specialist geosciences. The headquarters of Geo Services is at 25 Victoria Street, London SW1.

Students Chemical Information Project

In 1966 the Chemical Society Research Unit (at the University of Nottingham) with financial help from the Office for Scientific and Technical Information started evaluating *Chemical Titles* and *Chemical-Biological Activities* as a basis for a computerized current awareness service. To spread the knowledge of these services, OSTI inaugurated this Project by which all final-year Ph.D. students in chemistry, supported by the Science Research Council, were offered either a CT or a CBAC service. Finally over five hundred students in sixty-five institutions became involved in the Project. To establish these user profiles six liaison chemists were selected and located in university chemistry departments (each responsible for about ninety students) in six areas of the United Kingdom.

The final report of these six liaison chemists covering the period October 1967 and September 1968 has now appeared and is available from OSTI (DES, Elizabeth House, York Road, London SE1). It is issued in two parts:

Part I (Feb. 1969) A review of the project and the major results. (14 pages.)
Part II (June 1969) Details of operations, statistics, results of questionnaires and research reports from liaison scientists. (83 pages.)

Research in progress

Since 1968 the *Library Association Year Book* has included a brief listing of all the major library and information research projects currently in progress in this country, together with a note of projects recently completed. The following categories are not listed: research whose end-product is a bibliography, union list or like publication, theses for the Fellowship of the Library Association and research or planning projects which cannot really be described as formal research projects.

All organizations and individuals known to be engaged in major pieces of library and information research have already been circularized with a request to supply certain basic details for the 1970 listing. It may well be, however, that some have been overlooked, and any reader of this note engaged in such research and who has not received an information form is requested to contact the Research Officer, The Library Association, 7 Ridgmount Street, London WC1, as soon as possible.

Master of Library Studies (MLS)

Queen's University of Belfast will introduce this new degree course in 1971 and it will finally replace the present postgraduate Diploma course. A candidate for the degree must be a graduate or hold an equivalent qualification, and must attend a one-year full-time course, pass an examination in six subjects, and submit a dissertation.

Workshop on the British Technology Index

The School of Librarianship and Information Work of the College of Commerce, Liverpool, is providing a one-day workshop on the BTI to be held on 11th November 1969. The principles and policy underlying the preparation of the BTI as well as its day-to-day use will be discussed. For more information apply to Mr B. Houghton, Course Organizer (Tithebarn Street, Liverpool 2).

Copyright law

City University is presenting a series of six weekly lectures (6–8 p.m.) on 'Copyright law and practice relating to publishing and entertaining' commencing on Tuesday 4th November. The lectures will be given at the Graduate Business Centre, Gresham College (Basinghall Street, London EC2) and further information can be obtained from the Course Organizer at that address.

Metrication

A one-day seminar on Problems of SI Unit Introduction is being held by Coventry and District Information Group (CADIG) on Wednesday 29th October at Lanchester College of Technology. The aim of the seminar is to assist Information Officers, Technical Writers, Metrication and Standards Officers and all concerned with metrication. The fee of £5 5*s* includes coffee, buffet lunch and tea. Further particulars are available from CADIG Liaison Centre, Reference Library, Bayley Lane, Coventry, CV1 5RG. (Phone Coventry 25555.)

Seminar on Library Research Methods

A two-day seminar on library research methods, organized jointly by Aslib and the Library Association, will be held on 10th and 11th December 1969 at L.A. Headquarters. It is mainly (but not exclusively) intended for the teaching and research staff of schools of librarianship.

The thirteen speakers are all people experienced in research in library and information work and in the book trade. Detailed instruction on library research techniques will not be given but the speakers and the participants will discuss three main themes: methods used in studying documents, methods used in studying people and their interaction on libraries, and methods used in studying library processes.

Inquiries about the seminar should be sent to Mr M. Yelland, Research Officer, The Library Association, 7 Ridgmount Street, London WC1. The closing date for applications is 15th November.

'INFOFAIR'

The Ministry of Technology and the Thomson Organization are jointly sponsoring an exhibition, 'INFOFAIR', 16th–18th December 1969, and accompanying the exhibition, a two-day conference, 16th–17th December, on 'Management Decision through Information'. These take place at Imperial College, London. They are aimed at managers and decision makers rather than information specialists, to help management to a fuller understanding and greater utilization of the resources available in the information field.

For further information about the Conference, which costs 38 gns., apply to The Conference Secretary, Infofair, 3 Clements Inn, London WC2.

The Dainton Report

HMSO has now published *Principal Documentary Evidence submitted to the National Libraries Committee,* to accompany the *Report of the National Libraries Committee,* which appeared in June. The evidence is contained in two volumes, not sold separately, and costs £22 10s the pair.

National Reference Library of Science and Invention

To meet public demand the Bayswater Division of the NRLSI, at 10 Porchester Gardens, Queensway, W2, is now open for an extra two hours each day. The opening hours are 09.30–17.30, Mondays to Fridays (except public holidays).

CLW Principal in USA

Mr F. N. Hogg, Principal of the College of Librarianship Wales, is spending a year at the University of Pittsburgh as International Visiting Professor of Library Science. This is a new post specially created in the University of Pittsburgh Graduate School of Library and Information Sciences to foster international understanding in the world of library studies, and it is intended each year to invite distinguished librarians from overseas. Mr Hogg is the first holder of the chair. During the year he will be conducting seminars at Pittsburgh in the management of libraries and giving papers at professional conferences in Canada and Mexico as well as in several areas of the United States.

Acting as Principal at the College of Librarianship Wales in Mr Hogg's absence will be Mr D. J Grogan, Head of the Department of Bibliographical Studies at the College.

Mr H. E. Airey, 1920–69

We regret to report the sudden death, from natural causes, of Mr H. E. Airey, of the Unilever Research Laboratory, Port Sunlight, Cheshire.

Mr Airey graduated at University College, Oxford, in 1942 and obtained the Diploma of Imperial College, London, in the following year. The earlier part of his career was spent as a chemist in the rare-earth industry.

He joined Unilever in 1962 and his responsibilities here included the editing, library and information services. More recently he had become concerned with the standardization of analytical procedures for use within the Unilever centres.

His calm and well-considered approach to all situations is the aspect of him that most people will recall. Those who were close to him will also remember his wide-ranging knowledge, his intellectual abilities and his excellent company on social occasions.

Dr H. Coblans

It will surprise all those acquainted with his boundless energy and enthusiasm to learn that Dr Coblans retired from the full-time staff of Aslib at the end of August. When he came to Aslib in April 1964, from the European Centre for Nuclear Research, and, previously, Unesco, his international reputation was already an enviable one; to this he undoubtedly added, first as a member of the research staff and then as the leader of Aslib's team of consultants and, for good measure, Managing Editor of the *Journal of Documentation*. Happily, Aslib has prevailed upon Dr Coblans to continue in part-time work in this latter capacity in his retirement, and also to serve as technical secretary of the new Council Committee on Mechanization.

Conference and Meetings Organizer

We welcome to Aslib our new Conference and Meetings Organizer, Elizabeth Lowry-Corry. She comes to us with a wide and varied experience of arranging conferences from the British Association for the Advancement of Science and the Society of Industrial Artists and Designers.

BRIEF REVIEWS

BAUMFIELD, BRIAN H., *and* MCCOLVIN, KENNETH ROY. The library student's London. 2nd ed. London, South Eastern Division AAL, 1969. 196 p., map. 30*s* (20*s* to members).

This little book is intended to enable library students studying in London to make the most of the resources in the London area. It contains a brief review of organizations concerned with librarianship, a chapter on education for librarianship, mini directories of public and special libraries in London, and chapters on other organizations of special interest to librarians. There are also chapters on various aspects of librarianship which tell the student where he can see various systems and equipment. There are chapters on living in London, and places of general interest. The book contains much information that is not easily available elsewhere, and other people besides students may find it useful to have on their shelves. It should be used with a certain amount of caution, however, as there are a number of things in it which are out of date or otherwise incorrect.

BRITISH STANDARDS INSTITUTION. Alphabetical arrangement and the filing order of numerals and symbols. First revision. London, 1969. 14 p. (BS 1749 : 1919) 10*s*. (SBN 580 05620 1.)

The first edition of this essential tool in information work appeared in 1951. There have been many developments since then but the crucial one, which is taken account of in the present edition, is the problems arising from the use of computers in mechanized documentation. The main differences between the two editions are in the rules for dealing with numerals and symbols, hyphens and apostrophes, groups of initials, and complex entries. The widespread use of this standard is of great importance for greater efficiency in the communication of information.

COLLOQUIUM on the Anglo-American cataloguing rules, Toronto, 31st March–1st April 1967. Proceedings. The code and the cataloguer, edited by K. H. Packer and D. Phillips. University of Toronto Press, 1969. 136 p. (London, Oxford University Press, 58*s*.) (SBN 8020 1583 2.)

This is a record of a meeting organized by the School of Library Science and held within a few weeks of the publication of the N. American edition of the code. The Editor of the new code, C. Sumner Spalding, gave a number of key papers which included the background, problems and characteristics of the code and also the relationship of the Library of Congress to the new rules. The Proceedings also contain detailed suggestions for implementing the rules in various categories of libraries, and the discussions at each session.

DIRECTORIES of special libraries in Israel (excluding Humanities). 3rd ed. Tel Aviv, Center of Scientific and Technological Information, 1969.

This bilingual directory lists 283 libraries serving institutes of higher education and technical colleges, Government and municipal departments, professional and research institutions, and industrial and business enterprises. For each library noted the English section gives name, address and telephone number of the parent organization, founding date, number of books and number of current titles of periodicals, and special services available.

ENCYCLOPEDIA of library and information science, edited by A. Kent and H. Lancour. Volume 2: Associat. to Bookworld. New York, London, Marcel Dekker, 1969. 717 p. (Subscription price $35 per volume.)

The second out of eighteen volumes helps to clarify the plan, which is, however, still far from clear. (See review of vol. 1 in *J. Doc.*, 25, 1969, p. 65–6.) Among the lengthier and highly informative articles are ones on Automatic data processing, Automatic analysis, Bibliography, Binding, Biological literature, Biomedical libraries and the Bliss Classification (entered as Bibliographic Classification).

LIBRARY ASSOCIATION. Cataloguing and Indexing Group. Seminar on the Anglo-American Cataloguing Rules, Nottingham, March 1968. Proceedings edited by J.C. Downing and N.F. Sharp. London, 1969. 116 p. 30*s*. (SBN 85356 271 6.)

This Seminar, which was held only three months after the appearance of the British text of the Rules, consisted of four sessions (Rules for entry and heading covering two sessions, Rules for description, and Implications of the Rules) with a general introductory talk and a final Open Forum. This record of the papers and the discussion provides a valuable account of the history of this successful international co-operation (partly told by the main actors themselves) and the first reactions of professional cataloguers to this important new code. A useful bibliography has also been included.

OFFICE FOR SCIENTIFIC AND TECHNICAL INFORMATION. Data activities in Britain. London, 1969. 90 p.

The previous edition (2nd) was issued in 1967 under the title of *Critical data in Britain*. There is an increase in the number of entries from thirty-eight to approximately one hundred arising partly from an approach to a wider range of organizations and an extension of subjects covered. It covers only physical data, thus excluding environmental and social science data. The arrangement is in eight sections: atomic and molecular properties, thermodynamic and thermophysical properties, kinetics, acoustics, electrical and magnetic properties, physical and mechanical properties of materials, and design.

The ICSU Committee on Data for Science and Technology (CODATA) is preparing a world list of critical data compilations. The UK contribution will be selected from this 3rd edition.

Copies may be obtained from OSTI, Elizabeth House, 39 York Road, London SE1.

TEKNISKA NOMENKLATURCENTRALEN. Korrosions—ordlista. Glossary of corrosion terms in Scandinavian languages with equivalents in English, French, German and with definitions in Swedish and English. Stockholm, 1968. 130 p. (TNC 40.) 40 *Kr*.

This is an authoritative and well-produced glossary produced by the Swedish Centre of Technical Terminology, as part of its series of such terminological guides in a number of technical fields. There is an alphabetical index for each of the six languages covered.

TUNEVALL, G., *ed*. Periodicals relevant to microbiology and immunology. A world list, 1968. New York, London, Wiley-Interscience, 1969. £4. (SBN 471 89240 8.)

This list prepared on behalf of the International Association of Microbiological Societies (IAMS) includes about seven hundred periodicals from thirty-five countries. For each periodical full references (title, standard abbreviation, biographical data), languages used, address of issuing organization, average number of articles relevant to microbiology are given. Useful information on the Member Societies of IAMS is also provided.

WASSERMAN, P., *ed.* Awards, honors and prizes: a directory and source book. Detroit, Gale, 1969. 307 p. $18.50.

This is a directory of 2,228 important awards which are given in recognition of outstanding achievement in many fields such as business, transportation, music, etc. The volume covers mainly American and Canadian awards but major international ones are also listed. Student awards, prizes for single contests and local or regional awards are not included.

The arrangement of the volume is alphabetical by the name of the body making the award and there are subject and name indexes. The information given for each entry includes the award's purpose and terms of eligibility; the form of the award, e.g. scroll, money, medal; frequency of award and the date it was established.

WHEELER, LORA J. International business and foreign trade. A guide to information sources. Detroit, Gale Research Co., 1968. 221 p. $8.75. (Management Information Guide No. 14.)

This annotated bibliography is a guide to the literature and organizations concerned with conducting business internationally.

The sources cited include books, pamphlets, government economic reports and statistical bulletins, yearbooks and encyclopaedias. The entries are arranged alphabetically by author or title, in subject groupings. There is an author-title-source index and a subject index. The sections cover investment, taxation, legal matters, advertising, management, marketing, international law and a useful section on investment conditions in specific countries.

The bibliography appears to be fairly comprehensive in its coverage of publications although only Kompass Italy is listed and no mention is made of the Kompass directories for other countries. However, though this publication is intended primarily for American business men, it will also be of interest and use to British and foreign exporters.

THE MINISTRY OF TECHNOLOGY AND TECHNICAL INFORMATION

C. G. GILES
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Paper presented at an Aslib Engineering Group Conference on Government-supported technical information centres, Birmingham, 15th May 1969

THE Ministry of Technology represents an entirely new approach to the interaction of Government and industry. On its formation, Mintech was given the task of 'guiding and stimulating a major national effort to bring advanced technology and new processes into British industry'. What has happened is that the old idea has been abandoned that science should be kept at arm's length from the main Government machine in order to preserve the integrity of research. The task is now seen as one of bringing industry and the Government research establishments together, in order to get the best possible cross-fertilization and market orientation: 'we now regard science and technology as being in industrial policy right up to the neck'.

Mintech is a large organization with almost 36,000 staff and, including staff in the UKAEA Establishments, there are altogether some nine thousand qualified scientists and engineers. The Ministry's activities fall roughly into five main areas:

First, there is its work in developing and carrying through programmes of action to deal with the problems of the industries for which it is responsible.

These industries make up the major share of the United Kingdom engineering industries—electronics, computers, electrical engineering, machine tools, chemical plant, shipbuilding, vehicles and engineering products generally and, of course, the aviation industry on which a great deal of the department's present activities are focused.

Secondly, there is the mobilization of the large research and development resources now available to the Ministry in such a way as to exploit to the full the potential they offer for promoting worthwhile advances in industry.

Next, there is the Ministry's special part in the national productivity effort through the advisory services provided, or supported, or stimulated by the Ministry.

Fourthly, there is its information and publicity responsibility to ensure that at all levels in industry there is an awareness of the possibility of using more advanced technologies to improve quality and output.

Finally, there are the Ministry's very extensive research and development and procurement responsibilities for defence and civil aviation.

The Ministry is also active in the fields of Standards, in international technological collaboration, the promotion of exports, and with problems of the supply and employment of technological and scientific manpower.

Mintech is both a major generator and user of scientific and technical information of all kinds and Appendix I lists the various R & D Establishments which are part of Mintech. They can be grouped under two main headings: those such as the Royal Aircraft Establishment, the National Gas Turbine Establishment and the Royal Radar Establishment, which make up the aviation and defence research establishments, and the others, including National Physical Laboratory, the National Engineering Laboratory and so on, which make up the industrial research establishments group.

As sources of technical information, all these establishments are ready to give advice on problems within their remit in response to requests by letter, telephone or personal application, provided that the amount of time involved is small. Appendix I does not exhaust Mintech research resources, however, since allied to Mintech are the resources of the United Kingdom Atomic Energy Authority which is included among the Minister's responsibilities. In addition, there are the forty-three industrial research associations (Appendix II); these are jointly financed by Government and industry, and the Government's share in this financing is provided by the Ministry of Technology.

The research associations are all-important information centres in the industries which they serve, but generally speaking they will quite naturally give priority in their services to the needs of member firms.

Much of the work of establishments appears first in the form of unpublished reports; Mintech has now established a special unit for assembling, abstracting, indexing and announcing all its report literature in the Reports Centre at St Mary Cray.

Mintech's Reports Centre is the clearing house for all scientific and technical information produced in the department, and we estimate that at the present time it is receiving information in report form coming from some 80 per cent of all Government-sponsored research and development. It also has extensive exchange agreements with the USA, with Commonwealth countries and with the AGARD countries. Its total input of reports in hard copy and in microfiche form amounts to some one thousand titles per week. The Reports Centre has the function of announcing and abstracting this body of material, and its main announcement vehicle is the bi-monthly abstracts journal, *R & D Abstracts*. From the beginning of this year a version listing the reports that are freely available in this country has been on sale at £12 a year.

This great body of report material available at St Mary Cray is indexed in various ways, and the Reports Centre offers search and bibliographical facilities, and a free loan service to the subscribers to *R & D Abstracts*. There is also a service giving up-to-date information of American military specifications or

'Milspecs'. Plans to install a computer at the Reports Centre are well ahead. The whole production process for *R & D Abstracts* is already highly mechanized, and a start has been made by the provision of computer-produced indexes for it.

At a later stage in the communication process information is published and, at the present time, Mintech publishes some 1,300 papers annually in the technical press. Various series of priced publications are also produced with the help of the Stationery Office, and also various unpriced publications which are distributed free to the appropriate target audiences. Among these is *Technical Services for Industry* which catalogues over 120 different information sources supported by Government funds.

A number of our establishments and the research associations are also active in the production of secondary literature such as *Water Pollution Abstracts*, etc.

'Techlink' is the name given to an experimental selective fast announcement information service with which Mintech is trying to help industry. The idea is to beam information about new ideas, equipment, processes or materials directly to the individuals in industry who can make use of the information. Each Techlink consists of a one- or two-page leaflet containing the essentials of some technical innovation and pointing to a source from which further follow-up information can be obtained. The material for Techlinks is gathered from the report collection, from the reports of the United Kingdom Atomic Energy Authority, the National Research Development Corporation and from the Department's R & D Establishments. We also draw on information of a similar kind from overseas, and notably from the United States. At present, Techlinks are being provided on an experimental basis without charge. Those who receive the service are invited to choose the topics of interest to them from a list of fifty-two headings.

Subjective impressions are that the service is filling a useful role. A Techlink announcing the appearance of a new research report on a subject can result in some two hundred requests for copies of the report being received in the course of a very few days.

New Technology is the Department's monthly bulletin to industry. This now goes to some sixty thousand recipients in the UK. Then there are the various mass media—press, films, broadcasting and television—which the Department uses in creating a climate of awareness of developments in technology, etc.

These, then, are Mintech's main publication channels and perhaps a word should be said on how these link with the activities of the commercial publishers.

Mintech is fully alive to the importance of the role of commercial publishers as disseminators of new technology and is anxious to work with them where it can. In particular, the view is taken that their skills in matching the information product to the needs of the particular market need to be exploited in the interests of technology as far as this can be done. Broadly speaking, information has a price, and users of information should generally be prepared to meet the cost of providing the information they receive.

Mintech has a role in stimulating in industry generally a greater awareness of the available information services, and their potential value, and to this end it is sponsoring a conference and exhibition on the theme of 'Information for Industry' which is planned to take place in the autumn.

Apart from the various services and resources mentioned already, Mintech is building up an extensive network of specialized information services and productivity services to help industry. The present ones are listed in Appendix III.

More detailed accounts of two of these services are contained in the papers (unpublished) submitted to the conference by Mr Dowden (Non-destructive Testing Centre, Harwell) and Dr Longfield (Industrial Unit of Tribology, Leeds).

In considering the question of establishing such specialized services in a given field, the first concern is the evidence that there may be for a clear industrial need and justification for the proposed service. The second question is whether there is an available centre of appropriate expertise which might undertake the work, and upon which the new project can be based and can grow. This is, in effect, the chief criterion governing the site of a new centre. Next comes the question of future viability. The aim here is that, once established, new centres should become financially viable in a comparatively short space of time. Moreover, wherever possible, in supporting services, it is Mintech policy to aim to subsidize those who make use of the service rather than those who provide it.

These are principles of fairly general application and are the ones which are also being applied in considering the pros and cons of setting up further information analysis centres in areas of interest to Mintech.

As we see them, possible functions for such centres would be:

1 Identifying and gathering new science and technology in their appointed subject field.
2 Critically evaluating such information for current relevance and relating it to other current activities which may enhance its value.
3 Organizing such data and information in a manner which will permit their retrieval for a variety of users in a rapid and efficient way; and—if required—on a selective basis.

Having outlined in this manner the general scope and nature of Mintech's information activities, a final word should perhaps be said about how one gains access to them or makes contact with the most appropriate source of information and help. As a very first point of contact, Mintech has a Technical Enquiry Point at Headquarters which is open to all to use and which can be contacted by telephone. Next, at the regional level, there are the nine Regional Offices of Mintech which can be approached and which can help with access to the whole range of Mintech services or resources for helping industry. Linked with these, of course, is the network of some seventy Industrial Liaison Centres which are particularly concerned with assisting the smaller firms in the areas which they cover.

Finally, for librarians there is Mintech's own library network in Headquarters and in the various establishments which, although concerned essentially with meeting our own needs, will always try and assist with advice to other librarians in tracking down an information source within the Ministry.

APPENDIX I

Ministry of Technology R & D Establishments

Aeroplane and Armament Experimental Establishment
Explosive Research and Development Establishment
Fire Research Station
Forest Products Research Laboratory
Hydraulics Research Station
Laboratory of the Government Chemist
National Engineering Laboratory
National Gas Turbine Establishment
National Physical Laboratory
Rocket Propulsion Establishment
Royal Aircraft Establishment
Royal Radar Establishment
Signals Research and Development Establishment
Torry Research Station
Warren Spring Laboratory
Water Pollution Research Laboratory

APPENDIX II

Industrial Research Associations

British Brush Manufacturers' Research Association
British Cast Iron Research Association
British Ceramic Research Association
Coal Tar Research Association
British Coal Utilization Association
British Coke Research Association
Construction Industry Research and Information Association
Cotton, Silk and Man-made Fibres Research Association
Cutlery and Allied Trades Research Association
Drop Forging Research Association
Electrical Research Association
Flour Milling and Baking Research Association
British Food Manufacturing Industries Research Association
Fruit and Vegetable Preservation Research Association
Furniture Industry Research Association
Gelatine and Glue Research Association
British Glass Industry Research Association
Heating and Ventilating Research Association
Hosiery and Allied Trades Research Association
British Hydromechanics Research Association
British Industrial Biological Research Association
British Jute Trade Research Association
Lace Research Association
British Launderers' Research Association
British Leather Manufacturers' Research Association
Linen Industry Research Association
Machine Tool Industry Research Association
Motor Industry Research Association
Commonwealth Mycological Institute
British Non-Ferrous Metals Research Association
Research Association of British Paint, Colour and Varnish Manufacturers
PIRA: Research Association for the Paper and Board, Printing and Packaging Industries
Production Engineering Research Association

Rubber and Plastics Research Association of Great Britain
British Scientific Instrument Research Association
British Ship Research Association
Shoe and Allied Trades Research Association
Spring Research Association
British Steel Castings Research Association
Timber Research and Development Association
Water Research Association
Welding Research Institute
Wool Industries Research Association

APPENDIX III

Productivity and Advisory Services for Industry

Production Engineering Advisory Service
Low Cost Automation Centres
British Calibration Service
Numerical Control Advisory and Demonstration Service
Advisory Service on Special Glasses
Central Unit for Scientific Photography (RAE)
Industrial Applications Unit (RRE)
Electronic Materials Unit (RRE)
Materials Technology Bureau (Harwell)
Harwell Ceramics Centre
Non-destructive Testing Centre (Harwell)
APACE: Aldermaston Project for the Application of Computers to Engineering
National Centre of Tribology, Risley
Industrial Unit of Tribology, Leeds University
Industrial Unit for Tribology, Swansea University
Industrial Development Unit, Bangor University
Centre for Industrial Innovation, Glasgow
Cranfield Unit for Precision Engineering
National Research Development Corporation
SIRAID
National Computing Centre
Isotope Advisory and Experimental Service (Wantage)
Heat Transfer and Fluid Flow Service (Harwell)
Physical Properties Estimation System (NEL)

THE ROLE OF THE OFFICE FOR SCIENTIFIC AND TECHNICAL INFORMATION (OSTI)

D. H. MAY
OSTI

Paper presented at an Aslib Engineering Group Conference on Government-supported technical information centres, Birmingham, 15th May 1969

TECHNICAL information centres of one type or another span the whole range of intellectual effort and activity. At one end there are small one-man collections of material used by one or two groups of individuals, and at the other there are the very large collections, open to all comers, held by scientific and technical Government agencies. The role of OSTI at the present time is to provide support for a comparatively recent type of information centre, which we call a specialized information centre, for the purposes of experimentation and evaluation. This type of centre is now called an information analysis centre in the USA, and the importance attached to this information technique can be judged by the fact that there are now approximately two hundred such centres operating there.

In the United Kingdom a specialized information centre should have the following main functions:

1 Acquisition (location, selection, ordering and receiving) of all material likely to contain information of interest to the users of the centre. This should come from a variety of sources to help achieve complete coverage, e.g. Chemical Abstracts services, INSPEC, ISI. Indeed the centres can act as test beds for the new mechanized services offered by such organizations.
2 Evaluation of such material by experts for input to the centre.
3 Classification and storage of input material for retrieval. This may be done by manual or mechanized techniques.
4 Dissemination of this information through current awareness publications, specialized bibliographies, answers to enquiries and state-of-the-art reports.

In addition to providing these functions, the centre should satisfy certain other criteria. It should be located within, or in close association with, an active research group carrying out work relevant to the subject field of the centre. The centre should use subject specialists to perform the analysis, evaluation or synthesis of information and these specialists should preferably be integrated with the research group. The centre should be designed to serve a specified body of users and these users should be involved in the work of the centre as far as possible in order to ensure that their needs are being met. This involvement should include users outside the associated research group in order to ensure that this group does not solely dictate the type of service offered.

Criteria for establishment of specialized information centres

The properties just outlined are basic for any specialized information centre, but in considering whether or not a new centre is needed a number of other criteria must be considered. These are that:

1 The area of specialization must be of existing or potential importance for scientific and technological work and not be covered by existing services. The area is one where, because of inter-disciplinary interests, newness of the field, or its growing importance, it would be uneconomic or impossible for individuals or small groups to search on their own.
2 The information centre must meet a demand that is either established or can be shown to be required, perhaps during an experimental period. This means that there is a need amongst sufficient working scientists for the rapid selection and dissemination of information within the area, i.e. there is sufficient potential demand to support the cost of the centre.
3 The services of the centre should be open to all who can benefit by them and wherever possible there should be national/international collaboration.

Assuming that a proposed specialized information centre satisfies most of the above requirements and at least aspires to the rest, then it becomes eligible for OSTI support. OSTI's interest, however, is an experimental one, and support will normally be confined: to the development and experimental operation of services; to research, including evaluation studies; to establishing and defining operating methods, including co-operation nationally and internationally where appropriate; and to providing adequate documentation to assist others in establishing their own centres. The institution sponsoring the centre must normally be prepared to put some contribution themselves towards the centre in the form of accommodation, manpower or services, and, in any case, initial support will not exceed three years. It must not be possible to locate the work in an existing specialized information centre or to persuade an organization to undertake the work from its own resources. One of the difficulties with these requirements for support is to decide where development and experimental work ends and an operational service from the centre begins. No SIC has yet reached the fully operational stage but one or two are now approaching this.

SICs presently supported by OSTI

Using these criteria OSTI is presently supporting seven or eight centres. These cover the areas of biodeterioration, high temperature processes, intestinal absorption, ergonomics, rock mechanics, mass spectrometry, crystallography and possibly plasma physics. The mass spectrometry and crystallography projects are mainly data centres which have developed information functions as an essential part of their work. The Rock Mechanics Centre, although not involving analysis and selection of material by subject experts, is very near to an SIC and OSTI support at present has been given mainly for an evaluation of its activities. This is about as many centres as OSTI considers appropriate for experimental purposes, and the spread of subjects is fairly wide and balanced.

In general, therefore, OSTI has not stimulated further applications, because it is necessary to preserve a balance in the allocation of OSTI resources to different types of project.

As the existing centres have developed, interest in their work has grown considerably and many observers believe that they have a significant part to play in the future network of information services for scientists and technologists, and that this role complements, rather than duplicates, that of the major disciplinary services. OSTI is receiving now a growing number of enquiries about the possible establishment of new centres, and it has appeared recently that the time is ripe to analyse the experience of the existing centres and present it in a form which can be readily absorbed by scientists wishing to set up new centres. To this end, OSTI has placed a contract with Aslib, as part of its research programme, to visit a number of the SICs and critically examine their operations.

Preliminary results suggest that several important conclusions can be drawn. It appears that it is unrealistic to expect a centre to become fully established during the initial experimental period of three years. A good deal of this time is spent deciding on the method of approach and also there are recruiting and training difficulties. Promoting the new services and making suitable arrangements for publication and marketing also consume considerable time. While not changing the policy of expecting a centre to become self-sufficient, the necessity of extending the support beyond three years in some cases has been accepted. OSTI nevertheless continues to distinguish between research and development which are supported in full and support for operations which reduces to nothing or to a token contribution. Another major problem has been that the involvement of subject experts in the evaluation of information was rather less than was hoped. It does appear, however, that the centres are providing valuable services to their users; the problem of whether they can all eventually become commercially viable is as yet unsolved.

THE BIODETERIORATION INFORMATION CENTRE AS AN EXAMPLE OF A SPECIALIZED INFORMATION CENTRE

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Paper presented at an Aslib Engineering Group Conference on Government-supported technical information centres, Birmingham, 15th May 1969

THE purpose of a Specialized Information Centre is to provide a comprehensive information service within a relatively restricted subject field. In this country Specialized Information Centres have been established both independently and with the assistance of the Office for Scientific and Technical Information mainly on an experimental basis with a view to gaining knowledge of the operation of, and the need for, specialized information services. The Office for Scientific and Technical Information has drawn up a series of criteria for consideration in supporting Specialized Information Centres so that they can obtain useful knowledge both in regard to their operation and also in regard to their place in the national communication network. Of the existing Specialized Information Centres OSTI has supported six, of which the Biodeterioration Information Centre was the first. The areas to which particular attention has been paid and in which Specialized Information Centres can perhaps be most useful are the newly developing sciences and technologies where existing knowledge and experience is scattered and not well defined, and where literature is spread over a wide variety of sources. Thus the Specialized Information Centre can help not only in terms of its primary role in supplying information but as a catalyst for the overall development of each subject.

The basic function of the Specialized Information Centre is the collection and publication of relevant information from as many sources as possible and its efficient indexing and storage so that it is available for general or selective dissemination as well as for personal consultation where necessary. Another function, the importance of which should not be underestimated, is not only to provide the users with the data or references they need but to be able to refer them to those working in the particular topic in which they are interested and thus to stimulate direct personal contact.

It is desirable that an information centre which concerns itself with a relatively restricted subject field should maintain the closest possible links with all those who are actively engaged in practical research in that field, to facilitate both the extensive collection as well as dissemination of information. This is most easily achieved if the centre is in some way associated with an institution in which an aspect of such research is being actively pursued. Furthermore, if a Specialized Information Centre is situated in a technological university the interlinking of information and practical research can be of considerable value in promoting industrial contacts and thus aid in the training of industrially immediately useful personnel at both undergraduate and postgraduate levels. This latter point is of particular significance for a technological subject such as biodeterioration.

The initial response of users and potential users to Specialized Information Centres has been encouraging. Ultimately the most rigorous test of the usefulness of an Information Centre is in terms of economic evaluation through a degree of financial dependence on those who are particularly interested in the subject matter of a particular information centre, and thus it is intended that OSTI support should not be continuous.

One outcome of the catalytic activity of Specialized Information Centres on their subject seems to be of particular importance in the developing sciences and technologies. If it is not possible for this country to carry out extensive research in a complete range of technologies and sciences, then the operation of a Specialized Information Centre which can rapidly disseminate the results of such research in these fields in this country is clearly of use. This country, being at a world communication crossroad, together with the advantage of its reputation for the dissemination of relatively impartial information and also with its language advantage in regard to published materials, is in a unique position to develop Specialized Information Centres in a variety of fields. The running costs of, for instance, the Biodeterioration Information Centre are under £10,000 per year and it appears that a relatively small investment could easily establish this country as a leading disseminator of specialized information, with clear benefits primarily to this country, but also to the world as a whole.

The Biodeterioration Information Centre was established at the University of Aston in Birmingham in May 1965 with the aid of a three-year grant for £12,400 from OSTI, to collect, process and disseminate information relating to biodeterioration. This was subsequent to a meeting convened under the auspices of the then DSIR with a number of people representing those interested from industry, government research establishments, the research associations and universities. Biodeterioration, or the deterioration of materials of economic importance by organisms, has only recently emerged as a study in its own right and brings together a wide range of otherwise distinct fields of materials science and biology. Some examples of biodeterioration are the corrosion of metals and concrete as a result of bacterial action, microbial degradation of cutting oils and fungal growth on plastics, wood and other constructional materials, ships fouling and organisms associated with electronic instruments. In association with the Information Centre are laboratories in which research into certain fundamental aspects of biodeterioration are being pursued. Both information and research activities are under my direction, whilst I am also a lecturer in mycology within the Department of Biological Sciences. The closest relationship between information work, research and industry is an important aspect of the Centre's policy which is aimed both at exhaustive, selective collection of information and at adapting information services to the needs of the users, primarily the working scientist and technologist. Thus biodeterioration is of concern to a very wide range of industries, mainly on a fringe basis. The Centre early assumed an international role due to its being designated by the OECD Biological Deterioration of Materials Research Group, and subsequently by the International Biodegradation Research Group. To ensure such contracts the Centre is associated with a Consultative Council, the majority of whose members are outside the University.

Literature on biodeterioration appears in a very wide range of scientific and technical journals and in such forms as reports, patents and commercial literature. The main basis of the location of the references for the Centre is the 'Co-operating Specialists' scheme. Experts in different branches of biodeterioration all over the world each scan a small number of journals. By this means over one thousand journals covering all aspects of the subject can be scanned by those best qualified to recognize and evaluate relevant materials, namely, the expert in the field, and foreign language journals can be dealt with as effectively as those in English. Each co-operating specialist is supplied, by the Centre, with duplicate reference cards which provide one copy of the reference for the Centre and one for the co-operating specialist. Since the journals scanned will be those normally seen by the co-operating specialist in the course of his work and since he will probably keep his own record of papers on his own subject, the amount of extra work in which he is involved in providing references for the Centre is minimal. At present there are 144 co-operating specialists and their recruitment is facilitated by the involvement of the Centre in the development of the subject through practical research and participation in scientific societies and meetings.

The Co-operating Specialist Scheme means that large numbers of journals do not have to be obtained for scanning within the Centre, a task for which the Centre is not equipped either in terms of money or staff time. However, there is a small number of primary journals which the Centre receives, mostly in exchange for its own publications, and some secondary literature scanning is carried out of, for example, Current Contents and certain of the abstract journals published by the Research Associations. Computer-based SDI services have also been tried on an experimental basis. Well over 50 per cent of the references located by the Centre do, however, come from Co-operating Specialists and the scheme has been successful during its two years of operation, although it still needs to be extended further to include journals not so far adequately covered by the Centre.

The Centre attempts to obtain copies of all documents currently published on biodeterioration and much of the journal literature is obtained from authors as reprints, for which purpose the undercopy of the duplicate reference card is designed so that it can be used as a reprint request card, each of which is individually signed. The Centre has concentrated so far on establishing comprehensive coverage of current publications but a substantial amount of earlier material has also been collected.

Papers received by the Centre are indexed by three part-time workers who allocate keywords from the Centre's *Thesaurus of terms used in biodeterioration.*

These keyworders are paid according to the number of papers indexed and all have training in biology and live in the Birmingham area. Contact between the keyworders and the Centre is maintained by periodic meetings at which indexing policy can be discussed. Initially indexing was done within the Centre and during this period the *Thesaurus* was gradually built up. As the number of papers entering the system increased, however, it became obvious that to continue would mean recruiting an additional qualified person, involving not only an additional salary but creating accommodation problems. The use of part-time outworkers was adopted as an alternative.

This information is stored on feature cards and the capacity of one set of cards is ten thousand document numbers, sufficient for about four years intake of documents. In addition to the feature cards, indexes of information from the reprints are maintained and arranged by author, journal title and institution. Through the institution's index the Centre is building up a complete picture of biodeterioration research throughout the world with details of the research institute, its staff and their fields of research and publications. It is hoped that it will eventually be possible to publish this information in directory form, although it is realized, particularly in an industrial context, that lack of publication does not necessarily mean lack of research activity or lack of specific expertise and experience.

Current additions to the Centre's holdings are published four times a year in classified form in *IBBRIS* (the International Biodeterioration Bulletin Reference Index Supplement). Over three thousand references appear in *IBBRIS* each year and it is through this that the Centre hopes in the future to raise a significant part of its income through economic pricing. The Centre operates a comprehensive question answering service which was first publicly advertised internationally in September 1967. At present there is usually one enquiry per day and about three visitors per week. Questions are answered in the form of references to the available literature, either comprehensively or selectively by extracted data. Where necessary the Centre will refer an enquirer to a specialist in the subject, particularly when there is little published information on the enquiry. Should the enquirer have difficulty in obtaining papers the BIC will supply photocopies. At present all services, except the photocopy service, are free of charge; one of the characteristics of biodeterioration problems is their 'one off' nature. Considerable publicity has been organized by the Centre through the mass media, as well as by specialized publicity directed at the specialist and industrial user.

In addition to *IBBRIS* the Centre also publishes the *International Biodeterioration Bulletin* (*IBB*). This is devoted to both original and review articles on all aspects of biodeterioration as well as carrying 'News and Comment' and book review sections. Originally *IBBRIS* formed part of *IBB* but since 1967 has been a separate quarterly publication. The *IBB* was initially published twice a year but now it, too, appears quarterly. Although not now directly connected with the work of the Information Centre, the *IBB* is valuable as an advertising medium for its services as well as being an important organ of the Centre's policy of increasing general awareness of biodeterioration. Current annual subscriptions are £4 for each publication or £6 for the two. These prices cover the printing costs of the two journals but do not, by any means, cover the cost of collecting and processing the references which go to make up *IBBRIS*.

The information work has acted as a considerable stimulus to the research work and industrial contact of the Centre and it does seem that the Centre has a significant role to play within the University and in the subject as a whole internationally. The need of the Centre now is for critical evaluation of its collection and dissemination services and economic independence, and these are its tasks in the next three years for which it has again been funded on a reducing basis by OSTI.

Letters to the Editor

Dear Sir,

ASSESSMENT OF INFORMATION SERVICES

We are very glad to see the letter by Mr Barkla and Miss Thompson of the Sheffield University Biomedical Information Project. The information contained in this case study confirms our belief that title-based computerized services retrieve only a small proportion of the available information.

The point that makes this serious is the fact that the proportion of support given to develop computerized services must be approaching a hundredfold greater than that given to aid any other type of service. This gives a situation where the real needs (and hence market) for information services are severely distorted, and there has been a danger, whilst heavy subsidies were being given in this country to computerized services, that these would push all other types of service out of existence. This danger is not because the computer services are more efficient, but because nobody else would be able to compete with the resources they had available to publicize themselves; e.g. by the use of substantial staffs of liaison scientists who, in the past few years, have operated in a manner not dissimilar from technical salesmen for one particular service which we believe thus obtained a virtual monopoly of chemical information services in this country for a time.

Though it is very fashionable to apply computers to every problem today, there are still some areas which can be tackled much better (and more economically) by less sophisticated means.

Yours faithfully,

P. S. DAVISON
D. A. R. MATTHEWS

Scientific Documentation Centre Ltd,
Holbeath House,
Dunfermline,
Fife.

11th September 1969.

Dear Sir,

INFORMATION WORK—ART, TECHNOLOGY OR SCIENCE?

The diversity of views about information work—is it art, technology, primary science, secondary science?—on which Mr Drage comments in a recent letter (*Aslib Proceedings*, September 1969), surely arises because different types of activity are discussed under one name.

Information work is essentially the work of facilitating the transfer of information (usually, specialist information) from one person to another. Information transfer is one form of human communication, which is itself a major aspect of interpersonal behaviour. The objective study of interpersonal behaviour is full of difficulty, but can without question be claimed as a science, to which the name 'social psychology' is often given. In this sense, information work is one of the social sciences, studying people, and hence contributing to our understanding of the needs of information users.

Information transfer can be a simple face-to-face affair, but it often takes place through a number of intermediate steps involving documents. This is where the information worker comes in. The channels through which information may flow are so complex that the prospective recipient requires aid in choosing and using them. In this sense of giving aid, information work is indeed an art, requiring understanding of both user needs and information sources.

The incessant generation of information in modern society leads continuously to the proliferation of new sources, new modes of publishing and announcing publications, new guides to available sources. The urge and the necessity to impose some order on this medley, to organize information transfer effectively and efficiently, brings about the devising and implementing of information systems. A system is an interacting assembly of components—which, in the case of an information system, include documents, records, equipment and staff. To design and operate an information system needs an understanding of all its components, and the ability to weave them together into an effective and efficient whole. In this sense, information work is a technology, drawing heavily upon techniques that have been developed in the management of other types of enterprise.

Perhaps this is where Plato comes in. The systems we devise can be closely moulded to expressed user needs and based on readily available technology: they will earn good marks for practicality. But sometimes, like Plato in *The Republic,* we can dream of ideal systems, of how users might be educated to behave, of what technology might achieve: the ideals may be impractical, at times pernicious, but without vision there is no progress.

In its whole sweep, therefore, information work includes: science, that helps us to understand our problems; technology, that helps us to solve them, and the art of participating in each delicate interpersonal communication into which we are invited. Rare indeed is 'the really great man', of whom Mr Drage writes, who can embrace this whole range, equally proficient as scientist, technologist and artist. It is for this reason that each of us, at best proficient in one skill, can so easily 'get our priorities wrong'.

A clear view of priorities in information work can only be achieved if science, technology and art—in the shape of those engaged in research, system development, and information service—continually interchange their experience. To foster this interchange is, of course, one of the main purposes of Aslib.

Yours faithfully,

B. C. VICKERY
Assistant Director (*Research*)
Aslib

12*th September* 1969.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work: bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology: subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

Items are available in the Aslib Library and may be borrowed unless marked to indicate reference copies.*

User Studies

LUBANS, J.
Student use of a technological university library.
IATUL Proceedings, vol.4, no.1, July 1969, p.7–13.
Statistical survey of student use of the Rensselaer Polytechnic Institute Library during 1968, to evaluate student attitudes towards and quantitative use of library services.

PAZUKHINA, V. N.
O predpozylkakh bibliografirovaniya patentnoi dokumentatsii na osnovanii izucheniya zaprosov chitatelei v bibliotekakh sssr.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.4, 1969, p.7–12.
The premises underlying the bibliographic treatment of patent documentation, based on a study of readers' inquiries in the libraries of the USSR.

SYMPOSIUM on training chemists in the use of chemical literature. 156th meeting of the American Chemical Society, Atlantic City, NJ, Sept. 8–13, 1968.
Journal of Chemical Documentation, vol.9, no.2, May 1969, p.91–109.

Administration and Management

The WELL designed office provides the will to work.
Office Methods and Machines, vol.16, no.188, August 1969, p.20–2.
Office planning for productivity: a study in environmental influences.

Printing and Publishing

HEALD, J. H.
An equilibrium theory for the meeting paper.
IEEE Transactions on Engineering Writing and Speech, vol.EWS–12, no.1, May 1969, p.18–19.
Some theoretical guidelines on writing and delivering papers.

COLODNER, ARNOLD
A survey of technical publications in Israel.
Technical Communications, vol.16, no.2, 2nd Quarter 1969, p.16–19.
The various problems and challenges are discussed.

FREYTAG, JÜRGEN
Die Inhalt-Form-Beziehungen bei Informationsquellen sowie einige Kriterion zu ihrer Bestimmung.
Informatik, vol.16, no.2, 1969, p.26–8.
Relationship between content and format in information sources and some criteria for their definition.

NEUBAUER, K. W.
International standard book numbers.
IATUL Proceedings, vol.4, no.1, July 1969, p.17–19.
A report of the second meeting held by the working group for ISBN of the International Organization for Standardization.

BARKER, RONALD E.
International copyright: present position and problems. Part 1.
British Book News, August 1969, p.577–81.

CAILLÉ, PIERRE FRANÇOIS, *and* MALINVERNI, PIERRE
Study of comparative copyright law: practical application of multilateral conventions and national laws concerning the protection of translators.
Copyright Bulletin, vol.3, no.2, 1969, p.4–18.

Reprography

WHITNEY, WILLIAM T.
Miniatures and microforms—a reference librarian looks ahead.
ACRL Monograph, no.30, 1969, p 47–56.
How a library can set up its own store of microforms.

Subject Organization

EICHHOLZ, W.
Fachliches Zentral-Depot und Ankundigungsblatt–Wege zur aktuellen Information in Landwirtschaft und Nahrungsguterwirtschaft.
Informatik, vol.16, no.2, 1969, p.51–3.
A specialized information centre for agriculture and nutrition.

POTTER, A. M.
How the data bank works.
New Society, no.358, 7 August 1969, p.211–12.
Researchers' ways of recording data vary widely—the SSRC's Data Bank's system of dealing with this problem.

KLYUCHARV, G. V., *and* LAGUTIN, K. K.
Stroitel'nyi katalog–novoe mezhotraslevoe

spravochno-informatsionnoe izdanie.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.5, 1969, p.5–7.
Construction industry catalogue—a new interdisciplinary reference and information publication.

LILLEVYALI, A. A., *and* YASHINA, V. M.
Opyt izdaniya mikrokart patentov v elektrotekhnicheskoi promyshlennosti.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.5, 1969, p.19–20.
Issuing of microcards of patents in electrical engineering: a case study.

ROBINSON, JANET O.
The language-teaching library.
Education Libraries Bulletin, no.34, Spring 1969, p.1–10.

VENEZKY, RICHARD L.
Computer-aided humanities research at the University of Wisconsin.
Computers and the Humanities, vol.3, no.3, 1969, p.129–38.
A series of projects in humanities computing centering on an information retrieval system (INFOL) and a concordance system (BIBCON).

Mechanization

USA standard for a format for bibliographic information interchange on magnetic tape.
Journal of Library Automation, vol.2, no.2, June 1969, p.53–95.
Includes as appendices: I Preliminary guidelines for the implementation of the standard; II Proposed utilization of the standard.

BOSSUAT, MARIE-LOUISE, *and* ANNICK, BERNARD
Un exemple d'emploi d'ordinateurs électroniques pour l'impression et la gestion des catalogues de périodiques.
Bulletin des Bibliothèques de France, vol.14, no.6, June 1969, p.243–56.

BENNETT, W. C.
Unicon archival mass memory system.
ACRL Monograph, no.30, 1969, p.85–7.
Permits the information contained on one thousand or more reels of magnetic tape to be stored in only one roll of "Unidensity" tape.

HEITE, H. J.
Beitrag zur Literaturdokumentation mit kombiniertem Einsatz von Rand- und Sicht-Lochkarten.
Methods of Information in Medicine, vol.8, no.3, July 1969, p.154–9.

BEATTIE, J. D.
Natural language processing by computer.
International Journal of Man-Machine Studies, vol.1, no.3, July 1969, p.311–29.
Introductory review of some aspects of the computer processing of natural language including discussion of applications of such processing, information storage and retrieval and computer-assisted instruction.

Classification and Cataloguing

FREEMAN, C. B.
Bliss's bibliographic classification.
Education Libraries Bulletin, no.35, 1969, p.21–8.
Contents of all the volumes are briefly described, with special reference to the needs of colleges of education and schools.

HOWARTH, R. J., *and* LIM, A. L.
An approach to program documentation.
Computer Bulletin, vol.13, no.8, August 1969, p.291–5.
Unique program identification scheme based on the ACM classification system for *Computing Reviews*.

ROBERTS, MARGARET
What's become of SfB: developments in building information systems.
Catalogue and Index, no.5, July 1969, p.12–13.

TEMNOV, V. A.
Ispol'zovanie rubrikatorov na osnove UDK dlya tematicheskogo poiska informatsii v referativnykh zhurnalakh.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.5, 1969, p.13–14.
The use of UDC-based schedules for an information search by subject in abstract journals.

DOWNING, J. C.
Anglo-American cataloguing rules. an appraisal.
Education Libraries Bulletin, no.35, Summer 1969, p.37–51.

WILLARD, D. DEAN
An argument against the use of conventional headings in the cataloging of primary legal sources.
Library Resources and Technical Services, vol.13, no.2, Spring 1969, p.198–202.

GILBERT, J.
Problems of corporate authors: some aspects of the new code.
Catalogue and Index, no.15, July 1969, p. 14–15.

SEELY, PAULINE A., *ed.*
ALA rules for filing catalog cards: differences between 2nd and 1st editions (arranged by 2nd ed. rule numbers).
Library Resources and Technical Services, vol. 13, no 2, Spring 1969, p.291–4.

Language and Indexing

BRETON, JEAN-MARIE
Informatique juridique—indexation par mots—clés ou texte integral?
Informatique et Gestion, no.8, May 1969, p.25–6.

BARLUP, JANET
Mechanization of library procedures in the

medium-sized medical library·
VII: relevancy of cited articles in citation indexing.
Bulletin of the Medical Library Association, vol.57, no.3, July 1969, p.260–3.

SMITH, J. E., *and others*
KEYWORD-INDEX. A computer oriented personal reference retrieval system.
Methods of Information in Medicine, vol.8, no.3, July 1969, p.152–4.

PETERSON, NORMAN D.
Textual processing, a computerized aid for the writer, editor, and reader.
IEEE Transactions on Engineering Writing and Speech, vol.EWS–12, no.1, May 1969, p.9–12.

MCGARVEY, ALAN R.
A reverse co-ordinate system for retrieving engineering site and building drawings.
Journal of Chemical Documentation, vol.9, no.2, May 1969, p.125–6.
System developed by Armstrong Cork Co., Lancaster, Pa.

POKRAS, YU L.
Informatsionno-poiskovyi yazyk deskriptornogo tipa po spetsializatsii i kooperirovaniyu v mashinostroenii.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.5, 1969, p.12–15.
An information retrieval language in the field of specialization and co-operation in the machine-building industry.

OVCHINNIKOV, V. G.
Semantichezkie kharakteristiki IPYa i ikh vliyanie na rezyl'taty poiska.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.4, 1969, p.3–7.
Semantic characteristics of information languages and their influence on retrieval results.

BAUER, GERD
Zur geeigneten Begriffsordnung im Thesaurussystem chemie 1. Teil· Nichtstrukturchemische Begriffe.
Informatik, vol.16, no.2, 1969, p.35–41.

CAIN, ALEXANDER M.
Thesaural problems in an on-line system.
Bulletin of the Medical Library Association, vol.57, no.3, July 1969, p.250–9.
A revised and updated version of a paper given at the dedication ceremonies of the SUNY Biomedical Communication Network at the Upstate Medical Center, Syracuse, New York, 18th October, 1968. Describes the construction of a synonym thesaurus or entry vocabulary for the SUNY Biomedical Communication Network.

EICHORN, MARY M., *and* REINECKE, ROBERT D.
Development and implementation of a thesaurus for the visual sciences.
Journal of Chemical Documentation, vol.9, no.2, May 1969, p.114–18.
Description of the thesaurus developed to serve as the integrating unit for the computerized ISR system of the Vision Information Center.

IVANKIN, V. I.
Opyt postroeniya deskriptornogo slovarya po avtomobilestroeniyu s chastichno formalizovannym ustanovleniem svyazei mezhdy deskriptorami.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.4, 1969, p.11–14.
A tentative descriptor dictionary for automobile engineering with a partially formalized setting out of the links between descriptors.

ORLINKOV, L. L., *and* MALYATSKII, V. S.
Deskriptornaya informatsionno-poiskovaya sistema po svarke.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.5, 1969, p.15–16.
A descriptor and information search system for welding.

ALFORD, M. H. T.
Computer assistance in learning to read foreign languages.
Information Scientist, vol.3, no.2, July 1969, p.63–8.
OSTI-sponsored research at the University of Essex.

MORRIS, J. H.
Chemistry in line.
Nature, vol.223, August 1969, p.453–4.
Several machine language systems for representing structural formula in a line notation now in current use.

Information Processing and Systems

JACOBUS, DAVID P., *and others*
Compatibility in chemical information systems.
Journal of Chemical Documentation, vol 9, no.3, May 1969, p.118–25.
A survey at the problems, together with some suggested solutions to compatibility and convertibility. Includes illustrations.

ACKERMANN, H. J., *and others*
Data retrieval for a large organic synthesis project.
Journal of Chemical Documentation, vol 9, no.2, May 1969, p 88–91.
Data processing system at Olin Mathieson Chemical Corp. using IBM 1800 computer to provide multifaceted printouts for the project scientists and research management.

WAGNER, R. H, *and* HIGGINS, T. H.
A selective current-awareness system using Engineering Index's plastic data base. I. System design; II Performance.
Journal of Chemical Documentation, vol 9, no.2, May 1969, p.80–91

HOMMEL, PETER
Komplexe Rationalisierung betrieblicher

Informationssysteme Wissenschaft und Technik.
Informatik, vol.16, no.2, 1969, p.12–17.
An investigation into the rationalization of commercial information systems in science and technology.

DOBROVOL'SKAYA, A. I., *and others*
Informatsionno-poiskovaya sistema na perfokartakh dlya ucheta nauchnoi literatury po eksperimental'noi primatologii.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.5, 1969, p.17–18.
An information-search system on punched cards for registering scientific literature in experimental studies of primates.

ZAMMIT-TABONA, V.
The WHO programme information retrieval system.
WHO Chronicle, vol.23, no.7, July 1969, p.295–303.
Describes the WHO IR system operating in conjunction with a digital computer.

FIRTH, IAN
Holography sorts 'signals' from 'noise'.
New Scientist, vol.43, no.659, 24 July 1969, p.186–7.
Gabor's holography has provided inspiration for new models of the human brain, and for new ways of storing, processing and recovering information.

RUTSKEVICH, L. A.
Uchet i kontrol' v sisteme izbiratel'nogo raspredeleniya informatsii.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.4, 1969, p.23–32.
Record-keeping and control in an SDI system.

Communication and Knowledge

GREGORY, DANA S.
Compressed speech—the state of the art.
IEEE Transactions on Engineering Writing and Speech, vol.EWS-12, no.1, May 1969, p.12–17.
Speech has been shown to be comprehensible up to twice normal speed or better—compressed speech may be a solution to some of the problems created by the information explosion.

RAJBEE, MAHMOOD
A new script for documentation.
IASLIC Bulletin, vol.13, no.4, December 1968, p.289–93.
Proposal for an ideographic script for international information communication.

Professional Activity

ISRAEL. National Council for Research and Development. *Center of Scientific and Technological Information*
Directory of special libraries in Israel (excluding humanities); 3rd ed. Tel Aviv, the Center, 1969.
xlp. (Guide to Sources of Information Series. Directory no.1.)

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The charge for advertisements in these columns is 4*d* per word, minimum 5*s*. An additional charge of 6*d* is made for the use of a box number.

MEDICAL TRANSLATIONS. S. M. Bonnekamp, FIL, Member of the Translators' Guild (Med., Science & Lit.), 47 Firs Close, Muswell Hill, London N10. Tel. 01-883 3962 during office hours. After office hours automatic telephone answering machine will record messages.

TECHNICAL SWEDISH, DANISH NORWEGIAN translated by J. T. Craddock, B COM, FIL, Ekard, Ray Park Avenue, Maidenhead, Berks. Maidenhead 24931.

RUSSIAN/ENGLISH TRANSLATIONS. Chemistry, electronics, mechanical engineering. Twenty years' experience Government Department. A. de Merindol, 19 Ingelow House, Kensington, W8. 01-937 6788.

JAPANESE/ENGLISH, RUSSIAN/ENGLISH translations. Chemistry, medicine, biology, zoology. D. A. Fraser, BA, 22 Gresley Road, London N19. Tel.: 01-272 5664.

WILFRED E. GOODAY, ARSM, DIC, C.ENG, MIMM, FIL. Member of Translators' Guild, Romanian and French. 161 Rivermead Court, London SW6. RENown 1912.

MEDICAL, PHARMACEUTICAL, BIOLOGICAL translations from French, Romanian and Portuguese into English and from English into French and Romanian. Dr J. Jacobson, 94 Temple Fortune Lane, NW11. 01-455 1010.

TECHNICAL TRANSLATIONS from Russian, German and Polish into English. B. Klipstein, B SC(HONS), 1 Glenview Grove, Shipley, Yorkshire. Tel. Shipley 58215.

TECHNICAL AND COMMERCIAL translations from English into Russian. Mrs O. Linsley, 31 Parke Road, Barnes. London SW13. Tel. 01-748 8822.

TECHNICAL TRANSLATIONS from Japanese into English. R. A. Scutt, BA, 48 Somerset Avenue, West Wimbledon, London SW20. Tel. WIMbledon 1713 (01-946 1713).

RUSSIAN TO ENGLISH TRANSLATIONS. Physical sciences, all industries. Fast service. Ceramics and high temperatures specialities. Kenneth Shaw, c/o CIS Ltd, Churston End, Copythorne Road, Brixham, Devon. Tel. Brixham 3221.

TRANSLATIONS: TECHNICAL, SCIENTIFIC, all west-European languages. J. Smuts, B SC (ENGINEERING), FIL, 12 Thorndene Avenue, London N11. Tel. 01-360 7723.

TECHNICAL OR COMMERCIAL translations into/from English, German, Dutch and French. A. M. H. Speller, FIL, NGV, 6 Lakeside, West Ealing, London W13. Tel. 01-998 1045.

TECHNICAL TRANSLATIONS in all west European languages. Electronics and other special fields. Camera copy, printing. Peter Suchodolski, FIL (ENG), 70 Greenfield Gardens, London NW2. Tel. 01-458 2239.

TECHNICAL TRANSLATIONS. Spanish, French, German, Portuguese, camera copy or printed. E. W. Sykes, FIL, 39 West Close, Wembley Park, Middlesex. Tel. 01-904 4373.

For sale

OFFERS are invited for various scientific books and periodicals including N.B.S. and Brit. Ass. Mathematical tables; radiation biology and reactor physics textbooks; proceedings of 1955 and 1958 Geneva Conferences on peaceful uses of atomic energy; Trans. AIME 1893–1932. Lists available from Librarian, Atomic Energy Research Establishment, Harwell, Didcot, Berks. Closing date for offers 31st October 1969.

LITERATURE on automation. June 64 to date; complete. Any offers? Box 569.

CHEMICAL ABSTRACTS, bound, 1934–63 inclusive. Offers to the Purchasing Officer, Alcan Research and Development Ltd, Banbury, Oxon.

Appointment Vacant

BRITISH CERAMIC RESEARCH ASSOCIATION. Librarian. Applications are invited for the post of LIBRARIAN to take charge of the Association's library of some 12,000 volumes with an intake of 250 periodicals. A technical background, special library experience, and some knowledge of UDC would be an advantage. Duties include supervision of the routine running of the library, answering some enquiries, book ordering, and completing the changeover to UDC. Salary commensurate with experience and/or qualifications. Apply: Director of Research, The British Ceramic Research Association, Queens Road, Penkhull, Stoke on Trent, Staffs, quoting reference L/11.

BRITISH STANDARDS INSTITUTION

DOCUMENTATION OFFICER

Vacancies exist for Technical Officers in the Documentation Section of the British Standards Institution. The work will mainly be concerned with the universal decimal classification, and applicants must therefore be fully conversant with this system and have experience in using it for classification purposes.

Successful applicants will assist in the completion of the English Full Edition of the U.D.C. and, with relevant committees, in the revision and up-dating of its schedules. Candidates should preferably have a knowledge of French and German which is necessary for working in association with the Federation Internationale Documentation.

The successful candidates will be offered salaries commensurate with their experience and qualifications. Good working conditions, including staff restaurant and contributory Pension Scheme.

Please apply, enclosing a brief résumé of education, qualifications and experience to the Manager, Establishment Department,

British Standards Institution,
2 Park Street,
London. W1Y 4AA
(quoting reference 15/69)

LIBRARIAN

The Health Education Council is a new body which has been set up by the Government to plan, develop and promote national and local programmes of health education in co-operation with local authorities, educational institutions, professional organisations, voluntary bodies, industry and commerce. It will exercise these responsibilities in England, Wales and Northern Ireland and will make an important contribution to the public's health by increasing awareness of means for the promotion of health and prevention of disease.

A professionally qualified Librarian is required to take immediate charge of the Council's library and to expand its services to meet the needs of the Council whose research and educational activities cover a variety of areas in the health field. Duties will include requisitioning, indexing and issuing on loan, circulating periodicals and providing guidance on reference inquiries. There will also be some research. Experience in a specialist library and knowledge of information retrieval systems would be an advantage.
Salary scale £1,355–£1,575.

The above appointment is open to both men and women. The starting salary can be above the minimum of the quoted scale. There is a contributory superannuation scheme.

Write for an application form, quoting reference PR7, to:

The Health Education Council LTD

The Director General,
The Health Education Council Limited,
Lynton House, 7–12 Tavistock Square,
LONDON, W.C.1.

The British Food Manufacturing Industries Research Association have the following vacancies:

Assistant Librarian

Applicants should have some Library experience and a knowledge of the UDC system. A scientific background would be an advantage. Salary will be in the AEO/EO grades depending on age and experience.

Information Scientist

for the expanding Library and Information Section. Applicants should be Science Graduates with a good knowledge of German. Previous experience is not required, but interest in Information work is essential. Salary according to age and qualifications.

Please write to:
Secretary, BFMIRA, Randalls Road,
Leatherhead, Surrey.

Wellcome

Information Scientist

This post is in the Medical Information Centre of our Group Marketing Division. Duties will include assisting in the operation of a computerised medical information retrieval system using microfilm aperture cards, the indexing of medical and pharmacological literature, and literature searches for the marketing and clinical research departments.

Candidates aged 23 to 35 should be life science graduates, pharmacists, chartered information scientists or special librarians. This is an attractive appointment in a rapidly expanding international pharmaceutical organisation.

Please write quoting reference PR.66 to the Senior Personnel Officer,
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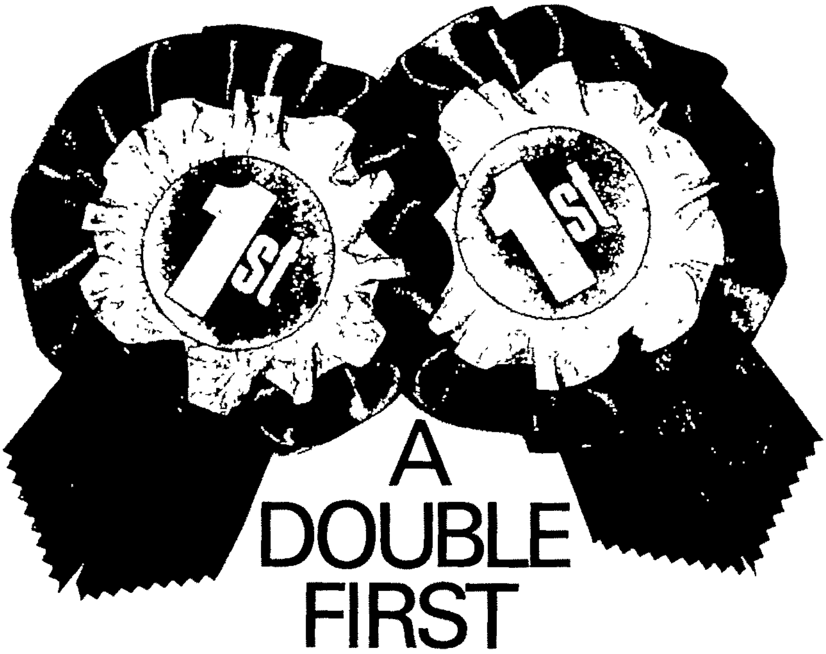

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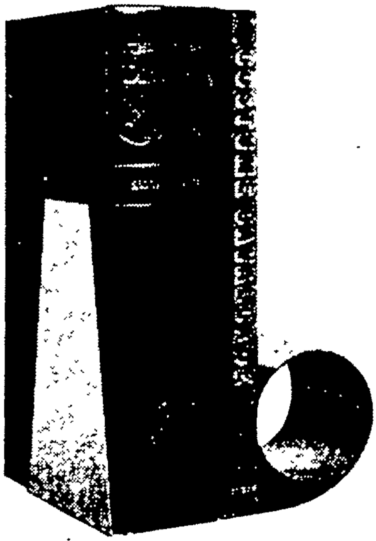

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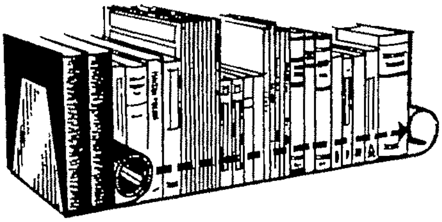

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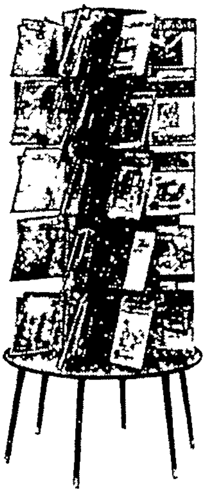

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 21 November 1969 Number 11

ASLIB CALENDAR 1969

December	
THU.4.	Aslib Chemical Group. Evening meeting and sherry party at Aslib. 5 p.m.
FRI.12.	Scottish Branch Cocktail Party followed by a talk: 'Some aspects of population growth'. Speaker: Dr K. L. Blaxter, FRS. Royal Society Rooms, Edinburgh. 6 p.m.
WED.17.	Aslib Christmas Party at Aslib. 5.30 p.m.

1970

January	
TUE.13.	Aslib Midlands Branch/Institute of Information Scientists. Joint meeting: Commercial Information. Speaker: G. P. Henderson. Arden Hotel, Birmingham. 6.15 p.m.
WED.21.	Evening Meeting at Aslib. Reprographic services in libraries. Speaker: T. J. Morgan (Greater London Council). 5 for 5.30 p.m.
February	
WED.4.	Aslib Engineering Group. One-Day Conference. Newcastle.
TUE.17.	Aslib Midlands Branch Meeting. Future Roles of Aslib and the L.A. Speaker: D. T. Richnell. Loughborough Library School. 6.15 p.m.
WED.25.	Evening Meeting at Aslib. Facsimile transmission. Speaker: J. J. Hall (Bristol Building and Design Centre). 5 for 5.30 p.m.
March	
FRI.20.	Scottish Branch Annual General Meeting and Conference. Stirling.
April	
FRI.10–SUN.12.	Aslib Aeronautical Group Conference. Cranfield.
THU.23–SAT.25.	Aslib Joint Northern Midland Branch Conference. Derwentwater Hotel, Portinscale, Keswick.
September	
MON.21–WED.23.	Aslib 44th Annual Conference. University of Aberdeen.

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(specialized Group interests are given after names, where relevant)

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Miss M. E. Thomas (*Film*)	London
G. H. Whiting (*TTG*)	Kempston
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O. Zahar (*Eng*)	London

Library Services for Open University Staff and Students: evening meeting

At the evening meeting on Thursday 11th December 1969 Mr D. J. Simpson, Librarian and Director of Media Resources of the Open University, will talk on some of the problems facing the Open University Library in supplying the needs of the staff, and those facing Public Libraries in serving the students. Members will have the chance of making criticisms and suggestions which may lead to improved liaison between the Open University and libraries throughout the country. The meeting will be chaired by Dr B. J. Enright, Librarian of the University of Sussex, and will begin at 5.30 p.m. (tea 5 p.m.).

Reprographic Services in Libraries

Mr T. J. Morgan, Consultant on Reprography, Greater London Council, will speak on Reprographic Services in Libraries at an evening meeting at Aslib on 21st January 1970.

Information officers and librarians need to make use of various reprographic media for the dissemination of information. These may be used as an alternative to the loan of an original publication, or for the production of bibliographies, library cards and other reference material.

The selection of suitable processes and equipment for library use will be discussed, and the cost and convenience factors presented in relation to the size and nature of the application. Particular consideration will be given to the developing concept of the duplicating library, as compared with the traditional circulating library, and the cost of appropriate duplicating methods, in hard copy and microfilm, measured against that of loan procedures.

Audio Visual Group

At an extraordinary meeting held on 1st October 1969 the Film Libraries Group agreed that the words 'information' and 'libraries' should not be included in their title and that the Group would in future be known as the Audio Visual Group, with its aim redefined as follows: to promote the use and encourage the exchange of information on the techniques of audio visual librarianship.

A caretaker committee was appointed to manage the Group until the Annual General Meeting, when a draft constitution will be agreed for presentation to the Council of Aslib. The officers elected were as follows: Roger Holman (Chairman), Frances Thorpe (Treasurer), Janet Andrews (Secretary), with two committee members, Anne Hanford and Eileen Thomas.

Chemical Group: A cost-effectiveness measure for information retrieval systems

On 4th December the Aslib Chemical Group will hold its Annual Sherry Party at Belgrave Square. This will be followed by a Paper given by Mr C. W. Cleverdon, Librarian of the College of Aeronautics, Cranfield. His theme will be that the aim of an information retrieval system is to present relevant citations to a user of the system, while at the same time withholding as many as possible of the non-relevant citations. A cost-effectiveness measure could therefore be the cost of retrieving a relevant citation (Cr). For this measure to be calculated it is necessary to know the operational performance of the system in regard to the precision ratio and the cost of the system. The measure was first applied in connection with the evaluation of the MEDLARS system, and examples of its use in this situation will be presented.

Social Sciences Group

At an open evening meeting of the Social Sciences Group on Wednesday 10th December 1969 Mr D. J. Foskett, Librarian of the University of London Institute of Education, will speak on the subject of Classification and Indexing in the Social Sciences. Some of the main points raised will include an analysis of modern views on 'Classification' and its relation to indexing, especially *concept co-ordination*; some problems in classification, such as the lack of standards in terminology; the function of classification in the structuring of knowledge and in the learning process, and the relation of classification to different types of index: alphabetical, KWIC, etc. Finally, Mr Foskett will raise the question of whether classification will have a part to play in the electronic age.

The meeting will begin at 6 p.m. (tea 5.30 p.m.).

Linguistic Aid for Scientists and Technologists

The experimental scheme, run by the National Reference Library of Science and Invention, whereby a reader faced with a document written in German or Russian could have the services of a linguist to help him understand the gist of the document, has proved sufficiently satisfactory for the NRLSI to extend it. Help is now regularly provided, subject to sufficient appropriately qualified staff being available, as follows:

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It may be possible to make *ad hoc* arrangements for help with these languages at other times, particularly at the Bayswater Division.

Assistance is given only with literature held by the Library, and the service is entirely oral. It is normally limited to half-an-hour's duration. Whenever possible appointments should be made in advance at the relevant main inquiry desks or by phoning: Bayswater 01-727 3022, Ext. 65, or Holborn 01-405 8721, Ext. 163, but readers unexpectedly encountering during the course of a search in either Division a foreign language article which they cannot comprehend should ask if the linguist for that afternoon is available.

If an article is more than six months old and there is no indication that the NRLSI holds a copy of a translation, the Commonwealth Index of Unpublished Translations should be consulted (01-235 5050) to find out whether a translation has already been made.

The Library Association's Mature Registration Scheme

The Library Association reports that it is now able to accept applications from candidates for the new Mature Registration Scheme.

The scheme offers a means of obtaining a professional qualification in librarianship, by means other than full-time study, to graduates holding degrees from a United Kingdom university or the Council for National Academic Awards, or to holders of other qualifications acceptable to the LA Council as equivalent, who are currently employed in a senior post in library or information work.

The scheme is based primarily on the accumulation of credits by attendance at a number of short intensive courses, organized by various bodies and approved by the Council of the Library Association, with written papers prepared after courses. (In the case of a long part-time course the written work may be concurrent.)

Aslib intends to co-operate in the running of the scheme by providing some of the accredited courses. Already four Aslib courses have been approved for the award of credits: Mechanization without Computers, Systems Analysis, Classification and Indexing Systems, and the Literature of Food and Agriculture, and others have been submitted for approval. Intending students are warned that they must enrol with the Library Association before the beginning of the course, and they cannot claim any credit for a course unless the associated written work has been satisfactorily completed.

Further details and forms of application for candidature may be obtained by writing to the Assistant Secretary, The Library Association, 7 Ridgmount Street, London WC1. No applications will be considered from persons under the age of twenty-seven years, as this scheme is not an alternative to the existing means of qualification open to younger graduates.

Full details of the proposals for the scheme can be found in the March issue of the *LA Record*.

Technical Help to Exporters (THE)

The British Standards Institution's Technical Help to Exporters Service, which took part in the Export Services Exhibition at Olympia in September, exists to help exporters with technical difficulties. It is based at the BSI Hemel Hempstead centre at Maylands Avenue, Hemel Hempstead, Herts (Hemel Hempstead 2341), where details of the full range of THE technical digests of overseas regulations can be obtained. The THE service is provided free, apart from a small annual subscription, to the range of digests of particular interest.

INFO–EXPO–70

The Information Industry Association of Washington, DC, has announced INFO–EXPO–70, a three-day technical meeting and trade show to be held at the Shoreham Hotel, Washington, DC, 23–25 March 1970. The theme of the meeting is 'Taming the Information Explosion'. It will preview the information problems and opportunities of the 70s.

INFO–EXPO–70 will consist of four technical sessions: Effects of the New Technology on Copying and Information Transmission; Interrelation of

Government and the Information Industry; Interrelation of the Profit and Nonprofit Segments of the Information Industry, and Case Studies of Products and Services of the Information Industry. The exhibits will parallel and help illustrate the contents of the technical sessions.

International Network for Chemical Information

Under a recent agreement between the American Chemical Society (ACS) and the West German Gesellschaft Deutscher Chemiker (GDCh) the latter will, from 1970, market in Germany the publications and computer-based information services of the ACS's Chemical Abstracts Service. The *Chemisches Zentralblatt* organization in Berlin will at the same time develop a system for processing data from the German chemical literature into the Chemical Abstracts Service computer system in Columbus, Ohio.

Chemisches Zentralblatt and the *Schnellreferate* (current awareness) service, produced by the *CZ* staff, ceases publication at the end of 1969, but in 1970 GDCh will begin publishing a series of specialized German-language abstracting and indexing services under the title *Chemischer Informationsdienst*. Each will concentrate on a limited number of journals in a specific area of chemistry. GDCh also plans to establish a computer centre to provide searches of *Informationsdienst* tapes and CAS computer tapes for scientists and organizations in West Germany.

GDCh is the second of five or six major input centres envisaged for an international network, which began to take shape in April this year with a similar agreement between ACS and the UK Consortium on Chemical Information, acting through The Chemical Society in London. Each centre will ultimately supply computer-readable information to a central computer processing system in Columbus, and share in output—both in the form of printed publications and machine-searchable tapes—from this central system.

While the input centres for the network, because of their cost, will be limited to five or six in the world, there are likely to be fifty or more output centres. These are currently operating in Canada, Denmark, Sweden and the UK. In the USA similar centres are functioning at the Illinois Institute of Technology and the universities of Georgia, Iowa, Louisville and Pittsburgh. The Netherlands and Belgium are expected to be the next links in the international output network and it is hoped that Japan may join within the next few years.

Library of Congress

The Geography and Map Division of the Library of Congress has moved to 845 South Pickett Street, Alexandria, Va. The Division provides cartographic and geographic reference services to Members of Congress, Federal agencies, and scholars from all parts of the world. It should be noted that the mailing address will remain Geography and Map Division, Library of Congress, Washington, DC 20540.

Technical Information on Microfilm (TIM): a correction

In our August issue we stated in the second paragraph of a news item on Technical Information on Microfilm Ltd that: 'Thus a linear reduction ratio of

150 makes it possible to include, at this stage, 250,000 catalogue pages and data sheets on seven transparencies'. This should have read: '. . . information from over 250,000 catalogue pages . . . ' (i.e. not 250,000 complete catalogue pages). We apologise for this error.

BRIEF REVIEWS

BLAGDEN, JOHN. Management information retrieval. A new indexing language. London. BIM. 1969. 153 p. 70*s*.

The work which went into the compilation of this thesaurus, the first to be published in the English language covering the general area of management, was supported by OSTI. There are five sections devoted to: the problem facing the BIM Library and the reasons for choosing co-ordinate indexing as an answer; a description of co-ordinate indexing; guide lines to the thesaurus; the thesaurus itself, and a list of glossaries consulted during its compilation.

The thesaurus contains about eight hundred preferred terms; and seven hundred lead-in terms, some of which are cross-referenced and some factored. An example of the first, which sounds topical, is Permissive Management, *see* Theory Y, and in the second case Golden Handshake, *see* Remuneration + Loyalty, provides an interesting statement. Some instructions for posting on are provided, for example, Graduates punch also Indirect Workers (clearly a feature of Permissive Management).

The book is attractively produced but (to quibble) it is a pity that the choice of black for preferred terms and red for lead-in terms was not the other way about, because the red is much more prominent.

HUTTON & ROSTRON. Vol. 1: Handro keycode dictionary. Vol. 2: Handro trigraphs. [London.] Hutton & Rostron (Architects). 1969.

This thesaurus for the construction industry is the final product of work which was described in an article in the March 1968 issue of this journal by R. M. Rostron, one of the two compilers.

The thesaurus consists of a list of some three thousand words, each of which is represented by up to eight keycodes. Each keycode is a four-letter combination, originally a truncated word, now non-mnemonic but pronounceable, and the combinations are so constructed that any selected word will lead to an appropriate keycode combination. Thus the synonyms 'schedule' and 'kalendar' both lead to LUST. Homonyms appear as neighbours with different keycode combinations, and specifics are composed by addition to the generic so that the concept 'noise' provided by SEAN becomes 'music' with the addition of WOLF. A highly specific concept like 'public house (pub)' requires the seven keycodes FEED + ROCR + BAUL + LUQA + REEM + IDMU + LIWE, which is the six keycodes for 'bar (drinking place)' with the addition of BAUL.

The thesaurus is obtainable as the major part of an annual subscription which costs an individual library £250 and an agency £1,000. The other elements of the service include quarterly updating of the keycode dictionary to accommodate any subscriber's requested additions, an annual instruction manual, and a quarterly newsletter intended to keep subscribers in touch and so to avoid duplication of indexing. Planned supplementary services include the arranged interchange of indexes and abstracts between subscribers and translations of the dictionary into other languages.

WOHLBIER, H., *ed., and others.* World-wide directory of mineral industries education and research. Houston, Gulf Publishing, 1968. 461 p. $35.

The coverage of this publication, mineral industries, has been interpreted as including only the applied disciplines of the earth sciences, i.e. applied geophysics, applied geology and applied mineralogy. The directory covers universities, colleges and research institutes. Each entry usually includes a brief description of the parent institution, and detailed information about the departments with interests relevant to this directory. In the latter sections names of researchers are given, subjects of activities and research projects, the titles and authors of some dissertations, and the titles of periodic publications of the institute.

The entries in the directory are divided into continents and the institutions are listed alphabetically by country. Indexes are to names of universities and institutions and names of faculty members; the indexes to departments and the subject indexes are subdivided into three sections: geophysics, geology and mineralogy; mining and petroleum engineering and mineral preparation, and metallurgy ceramics and fuel technology.

The directory has recently been received at Aslib. The preface is dated November 1968 but the last mailings for requesting information for inclusion were, it states, sent in September 1966 and March 1967.

43rd ASLIB CONFERENCE, COVENTRY, 1969

PRESIDENTIAL ADDRESS

SIR JOHN WOLFENDEN

IT is to me a very great honour and a very great privilege that I should be allowed to address you from this particular place this evening. My first connection with Aslib, so far as I remember, was as what used to be called, in the good old days of DSIR, a Visitor. There were two people appointed by DSIR to be watchdogs. One was supposed to know something about the particular organization that DSIR was supporting and the other was not. The first of those was Dr Allibone, and I was the other. Over the years I came to know something of what Aslib was up to—I came to know rather less about what Leslie Wilson was up to—and I developed during those years a very considerable affection and even partisanship for Aslib as distinct from certain other people who were trying to spend DSIR money. That particular connection came to an end because that watchdog job has to pass round from one person to another lest the watchdog should be seduced by those on the spot and become less of a watchdog than a barker the other way. So, after a bit I had to stop doing that and now I am here in this extremely anomalous position. I do not suppose for one moment that it is any personal merit on my part that has landed me in this particular chair. What was obviously in the minds of the inner caucus who run Aslib was that you should get at the Chairman of the UGC; but the Chairman of the UGC neatly side-stepped from Park Crescent into Bloomsbury and now you have got landed with somebody who is entirely unexpected in his official capacity as your President.

Inevitably, this Presidential address, so-called, is going to be very different from all you have had before, because those in the past have come from distinguished industrialists and technologists and information scientists, and even from time to time from distinguished, if that is not an ornamental epithet, politicians. I am, as everybody here knows, in your world a non-expert. That was said loud and clear about twelve months ago on my appointment, by a good many people, and it has been said by me a good many times since, and it is true. But I can bear it if you can; and I do not see why from time to time it's a totally bad thing that you should attract to your society and to your great profession those from outside who, up to that point, had not in fact qualified for the work that you do. You must not be ashamed of making converts. Secondly, besides being a non-expert, I am now branded as a British Museum Man. Well, again, you have got to put up with that, just as the British Museum has got to put up with it.

At this particular date in time it would clearly be both artificial and disingenuous if I were to take great pains to avoid the word 'Dainton'. Fred Dainton is a personal friend of mine of many years' standing; but I take no responsibility whatever for his Chairmanly capers. Granted that it would be artificial to avoid the word, I strongly suspect that it would at this moment be otiose for me to say anything about the Dainton Report, because you have already listened to a masterly exposition and analysis of it from a man whom I once had the pleasure of having as a colleague in a University and who now masquerades as Chairman of the Council of this Association. I have not, in fact, heard his address. I have, though, had the advantage of reading it, and just for once I got into a situation in relation to Don Richnell when he was seen but not heard. Anyhow, I cannot avoid saying something about Dainton. But if I am to talk about Dainton I beg you to believe that these are my personal opinions; they are not the official views of the Trustees of the British Museum; they are not even, so far as I know, the views of Maysie Webb or Michael Hill—and that is much more important than many of you suspect.

I am told that I was supposed to be talking about 'The National Reference Library of the Future', and that is plainly a topic about which everybody here knows more than I do. So you will forgive me if I first of all deliver three thundering platitudes about those three words. And the first of those three words is the word 'National'. I am not sure that this is the right adjective. It seems to be used in Dainton as the contrast to regional or even local. Obviously I hope, as everybody does, that the National Reference Library will be in the closest and most fruitful possible contact with all the other reference libraries in the country—specialist libraries, industrial libraries, public libraries, the lot. But National is not, forgive me, the top adjective in this field. Some of us think that there is in Bloomsbury a little library which is not only national but international, both in what it holds and in the services that it tries, under some handicap, to provide; and by contrast with the already famous (if that is the right adjective) paragraph 229 of the Dainton Report, which I do not doubt the Chairman of the Council quoted *in extenso* more than once today, I would, if you would forgive me, assert that the envisaged National Reference Library is not just national but is the British contribution to an international and worldwide reference library service.

The second of these three words is the word 'Reference'. I hope that this is a description which is going to turn out to be reliable. In my simple mind, knowing nothing of the techniques and the esoteric arcana of librarianship, a reference library is a reference library is a reference library. If you have an entry in your catalogue as a reference library and someone comes from Scunthorpe or from Houston, Texas, to consult this book, there will not be much joy for him if he is told that it is at the moment temporarily on loan in the University of Aberdeen, because he will not know how to get to Aberdeen. Of course, I know that there will be available all the modern technologies, and indeed all the future technologies and all the future resources of technological reproduction and access; but, if you will forgive my old-fashioned way of thinking, the Golden Haggadah or the Alcuin Psalter or the Lindisfarne Gospel have got to be in a reference library. I begin to understand, listening to the debates I have heard on this topic over recent months, why, in one of my Oxford colleges, there were still in the library chained books.

The third of these three is the word 'Library'. Heaven knows how you define a library. I guess there might be almost as many definitions as there are persons here present, and I have a word or two to say about this later on, too, but I would have thought that there is a meaning in the word 'library'. One of the two things I remember my Oxford tutor saying to me was something like this: 'There is great virtue, my boy, in looking at the outsides of books.' Now by that he did not mean rare bindings, he did not mean rare editions, or anything of that sort. He was talking about what every single person here has experienced (however you may try to kid yourselves that you have not). He was talking about the experience which is sometimes called 'browsing', which seems to me to be a rather aimless, a rather weak word. I do not know if you remember the *Who's Who* entry under the word 'recreation' of a very beautiful and very gifted actress, the late Miss Vivien Leigh. Vivien Leigh's entry as her recreation in *Who's Who* for years and years was the one word 'serendipity'. I know a bit about all the problems of open access and all this and that, but please, I as an ordinary man say to you, please, please, do not forget that people, even intelligent people, do not always know exactly what they are looking for until they find it; and a library, please, is a little bit more than a catalogue, however brilliantly computerized.

Well, now, after those three thundering platitudes about the three words National, Reference and Library, may I move on to three more in the particular area where perhaps the British Museum and Aslib come nearest to each other, the area which I am going to continue to call, *pace* Dainton, NRLSI? Now, my three dogmatic statements on this subject are as follows: The first, we at the British Museum think that the National Reference Library and NRLSI should be on the same site—and I do not need to tell you where we think that site should be. You can put this point either ideologically or practically; it seems to me that it comes to the same thing both ways. I still do not see, as an ordinary person who tries to read more or less intelligently more or less intelligent books, how you can divide up by any clear boundary line the scientific-cum-technological on the one hand and the non-scientific-cum-technological on the other. *A fortiori* and in parenthesis, I do not see how you can tidily separate technical literature which is needed to support a patent collection from technical literature of any other kind. This can be expressed either doctrinally, in which case one talks about a seamless garment or a seamless robe, the whole range of human achievement in literature. Or you can put it practically in attempting to distinguish the so-called scientific and technological, separating that from the non-scientific. How do you do this? How do you do this in such fields as engineering? How do you do it in biology? How do you do it, even more, in planning? How do you do it in architecture? How do you do it in that splendid topic geography? What, in any one of those fields, is scientific-cum-technological and what is not? And would you please draw me a straight line and not a wibbly-wobbly one which will separate them? As a small confession on this same line of thought, I long ago at home stopped trying to arrange my own books by what are or used to be called 'subjects'.

I do not know where you put *1066 and All That,* and I do not know where you put some of the more gay factitious biography, and I do not know where you would put the late Dean of St Paul's. That is my first dogmatic view in this area related to the NRLSI.

I have stated quite plainly my view that the National Reference Library and the NRLSI, whatever you call it, should be in the same spot. Now I know very well that there are those who put a rather different case, or who put a case with a rather different emphasis. I do not think there is any doubt in anybody's mind that there has got to be a new building for the NRLSI somewhere; nobody can tolerate any longer its fragmentation in four places, admirable as they all are, or the bursting shelves in that engagingly Betjemanesque Patent Office building. Granted there has got to be a new building, but it is argued by some that the site of the new building need not be the site of the National Reference Library. Patent demands require that the new NRLSI, by whatever name, should be as close as possible to the patent community, irrespective of the position of the National Reference Library. I can understand this point and I respect it. But I would make one plea to those who take that line, and I can only put it personally. I should be sorry, and I can put it no higher, if the whole of the planning for the National Reference Library/NRLSI complex were determined for ever by the topographical accidents in the 1960s and the 1970s of the situations of patent offices and libraries. I realize the necessity for the speed and convenience for the users of them, but we are, or we ought to be, thinking and planning in the perspective of centuries; and I confess I think it would be a pity if temporary and accidental considerations of location at the present moment determined that planning for the whole future.

Thirdly, I recognize also, and this is a different kind of point, the importance for all the obvious reasons of information retrieval and of the Special Libraries and Information Bureaux which underpin it. I expressed some hesitation a minute or two ago about how to describe a library, and I can only say now that I hope that the importance of this very important specialist element will not mislead us, nationally, internationally, on the highest policy-making level, about the whole nature of a library. Let me take an absolutely ludicrous personal example about information retrieval. If I want to know the population of Peru I take from my shelf Whitaker, and in Whitaker I can find the population of Peru. You in your daily jobs do exercises infinitely more complicated, infinitely more complex, and these I greatly respect and I greatly admire. But if I read, as I sometimes do, *Paradise Lost,* I do not go to *Paradise Lost* to find out information about original sin. If I read *The Ancient Mariner,* as I sometimes do, I do not go to it to find out about navigation of sailing ships in the Antarctic. And if I read *War and Peace,* which I do almost continually, I do not go to *War and Peace* to find out the facts about the commissariat arrangements in Napoleon's army in his invasion of Russia. Of course there is a highly important place for information retrieval. Nobody is disputing that for a second. But, if I may be allowed to say so, not all books and, *a fortiori,* not all libraries of books are 'information retrieval units'.

I apologize for being off-beam for this occasion and personal and dogmatic and banal.

May I finally, ending where I began, assert and affirm my devotion to Aslib and its purposes? I will do everything in my power to forward and further and, if necessary, defend Aslib in the perhaps turbulent years that there are ahead of us. I believe that that can best be done in a context, in a perspective; and that is what I have tried to outline with the platitudinous dogmatism of the amateur. Let me end where I began and repeat my profound gratitude to the Council of Aslib for the honour that they have done me in elevating me to this distinguished position.

And now, after this painful but apparently necessary interlude, let us all resume our personal comfort and enjoyment.

CO-OPERATION AMONG OR WITHIN RESEARCH ASSOCIATIONS

J. LEICESTER
Director of Research, British Launderers' Research Association

Paper presented at the 43rd Aslib Annual Conference, University of Warwick, Coventry, 21st–24th September 1969

THE theme of your Conference—Co-operation—describes perfectly the present role of the industrial Research Associations and their support of British Industry. Forty-five individual Research Associations are at present actively serving industry and they form a powerful link whereby the policy needs of government, the fundamental research activity in the universities and the technological and economic needs of industry come together at a focal point.

They provide co-operative research facilities and dissemination of research results and information to a vast number of members in that sector of industry where craft is changing to technology and where all can benefit from the work of a few. In the newer and larger technological groupings of modern industry they provide sponsored research and facilities for the individual or group of members alongside the co-operative services such as information and technical liaison.

Some of the Research Associations have developed into international centres of research with subscribing members from all over the world but their close and intimate contacts with industry are still their greatest asset. They employ scientists of distinction alongside technologists with extensive practical experience of the industry they serve so that both skills can be brought to bear quickly on any industrial problem via management right down to discussion and education at shop floor level.

From the general to the particular and the topic of your Conference discussions: co-operation related to scientific and technological information. It has often been said that, if all R and D activities ceased forthwith and the spare effort were re-allocated to putting over existing technical information and seeing that it was applied to industry, then for many years there would be little discernible difference in the rate of technological growth in industry. Whether this be true or not, certainly it is a fact that we do not make full use of the information available either through lack of appreciation on the user's part or lamentable failure on the part of those people whose job it is to put over vital information in a form in which it can be readily understood and applied by the user.

I am not for one moment suggesting that the Research Associations offer any particular virtue in this respect; we all know how difficult it is to ensure that our members read, learn and inwardly digest the information we supply to them. The RAs do, however, start with some very useful attributes in this field of co-operation and I would like to discuss a few of these in more detail.

The proportion of RA effort devoted to information and technical liaison

I couple information with technical liaison quite deliberately. It is no good turning out vast quantities of information if a large proportion of the readers are unable to appreciate and apply the technical data provided. It is easy to look at the large sophisticated industrial complex employing scientific and technical staff capable of reading and applying relevant information and assume that this is typical British industry. This is certainly not the case, and a large proportion of our industrial output stems from medium and small firms where often the managing director is the only person to whom communication of information can be directed. He often has neither the time nor the inclination to interpret for himself a mass of scientific or technical documentation—he wants the explanation and answer quickly in terms of what will be the effect on his productive costs and output. It is in this respect that the Research Association information complex can show a positive advantage.

Fig. 1 (on p. 432) illustrates the proportion of effort being devoted by RAs to information and liaison work and, as will be noted, the percentage of income spent on these services varies from a low of 3 per cent to a high of 50 per cent with an average for all RAs of approximately 14 per cent or, in terms of actual expenditure, a total for all RAs of £1,960,000 per annum.

The implications of this effort

The full value of this £1.96 m. spent on information and technical liaison becomes apparent when it is realized that the Research Associations, either by voluntary arrangements or as a result of the Committee of Directors of Research Associations and the Committee of Directors of Textile Research Associations, have already implemented arrangements whereby industrial members of one RA can be given access to information and technical help from other RAs operating in a particular sphere of activity.

Such co-operation is rapidly growing and the results achieved are most impressive. Two examples will serve to illustrate the many ways in which co-operation within and amongst the RAs is providing a most effective service to industry.

Firstly, an example of those RAs serving a number of industries using similar processes, raw materials and products—the textile industry.

This group, of which my own RA, Launderers', forms a part and which has for many years had a strong organization in the Committee of Directors of Textile Research Associations and a Standing Consultative Conference of Industrial Chairmen of Council and Directors to ensure co-operation in all aspects, is an excellent example of what has been achieved. Fig. 2 illustrates the structure of the CDTRA and the extent to which collaboration and co-operation has taken place. In the context of the present Conference, I would single out one co-operative activity in the case of information, namely the preparation of *World Textile Abstracts*[1]. Formerly, *Textile Abstracts* was edited and printed by the Textile Institute, who relied heavily on the supply of information from mainly the Cotton, Silk and Man-made Fibres Research Association and the Wool Industries Research Association, and to a lesser extent the six other textile RAs. It was realized some time ago that this procedure was somewhat clumsy and that the textile RAs themselves could undertake the complete job managed by an editorial board comprising representatives from five of the textile RAs, the editor being a member of the CSMFRA staff, and that institute undertaking responsibility for printing and general developments in the field of mechanized information retrieval. The journal is published twice a month and it is augmented by collective indexes. Keywords are specified by the abstractors for every abstract and these keywords, together with full reference information to each abstracted article, are entered on computer tape, together with similar information for abstracts already in existence. Work is in progress by the collaborating Research Associations to develop a computer-based retrieval system and also to link the keywords used by the British RAs with a similar system for textile abstracts developed by Professor Bakker at the MIT, USA. Tapes will then be sold to any member or non-member firms at appropriate costs, thus providing a fully computerized information retrieval service covering world-wide textile abstracts. Specific computer programmes are also being developed in the immediate future to enable subject and author indexes to be published in *World Textile Abstracts* quickly and more frequently than the present once per year. In this limited area of Research Association activity co-operation in all fields, including information, is therefore well advanced.

Turning to the wider sphere of all the Research Associations, the Committee of Directors of Research Associations has provided a focal point for encouraging group activity, for undertaking work and for providing information for all its members. Examples are legion but typical of its activity has been the encouragement of RAs having any connection with the building industry to set up a Building Materials Working Party (see Appendix 1) where matters of common interest can be discussed and co-operative work encouraged. A most successful venture in the field of information has been the issue by CDRA of a Building Materials Working Party publication on Testing Services, already in its fourth printing, to meet the demand for copies that has been received[3].

In similar manner the Food RA Working Party has been set up and a grouping of the Metal RAs has been active for some considerable time.

These examples will serve to emphasize the considerable co-operation that continues to build up between the RAs, making them a truly national organization serving British industry, even although they stand autonomous as primarily serving their own particular sector of industry.

Future objectives

With the increasing co-operative effort by the Research Associations in the field of information and technical liaison already in the region of £2 m. per annum, the rapidly expanding Ministry of Technology Regional Industrial Liaison Centres and Regional Offices, the Universities, Technical Libraries, Government via the National Lending Library for Science and Technology and its research stations, defence establishments and the UK Atomic Energy Authority, one cannot but wonder whether a certain amount of confusion exists in the mind of the user who is being inundated with information from all these sources. Without in any way wishing to imply criticisms of the good work all these bodies are undertaking, is this vast outpouring of information producing the desired result in terms of increased productivity and sales of industry's products in the export markets of the world?

By the sheer weight of publications are we swamping the reader or, worse still, confusing him to the extent that little or nothing is achieved as a result of this considerable effort which in total must run to many times the amount being spent by the Research Association sector?

These are the questions that must be answered in the interests of the country's economy, however good and effective or bad and ineffective are the agencies, RAs included, who are supplying this information. One is tempted to ask what would be the result if the total monies being spent and staff involved were unified in some way so as to link information retrieval and supply with technical liaison right down to shop floor level and possibly regionalized so as to serve a number of well-defined sectors of industry. I do not pretend or presume to know the answer to such a question. All I know is that through co-operation and sharing of services amongst forty-five RAs there has been a significant impact on every industry regardless of which RA it regards as its parent organization. I am sure this concept can be extended and improved to an even greater extent.

My final comment in complimenting Aslib on its theme for the present Conference is to remind those present that Aslib is one of the forty-five RAs I have been discussing and to leave the thought in the minds of all present that maybe Aslib's role in this unification and encouragement of co-operative effort in information and technical liaison could be of considerable significance. Who knows but that one of the first steps might not be a detailed study by CDRA in collaboration with Aslib of a central information centre linking the forty-five individual efforts of the Research Associations in this field. On the scale of £2 m. per annum, this would be a major undertaking, but if it could be done I am sure that co-operation would indeed pay off and industry would benefit accordingly. It could well set the pattern for further future rationalization which in the ultimate must surely reduce to a considerable extent the amount of duplication and overlap that inevitably exists when a multiplicity of organizations are all trying to sell the same product—technical information and know-how for the advancement of British industry.

REFERENCES

1 *World Textile Abstracts,* ed. J. H. Black, prepared by the Textile Research Associations, and published at the Shirley Institute, Didsbury, Manchester.

2 *Research Associations Building Materials Testing Services,* CDRA, Committee of Directors of Research Associations, 24 Buckingham Gate, London SW1.

F.1-EFFORT ALLOCATED TO INFORMATION AND LIAISON SERVICES

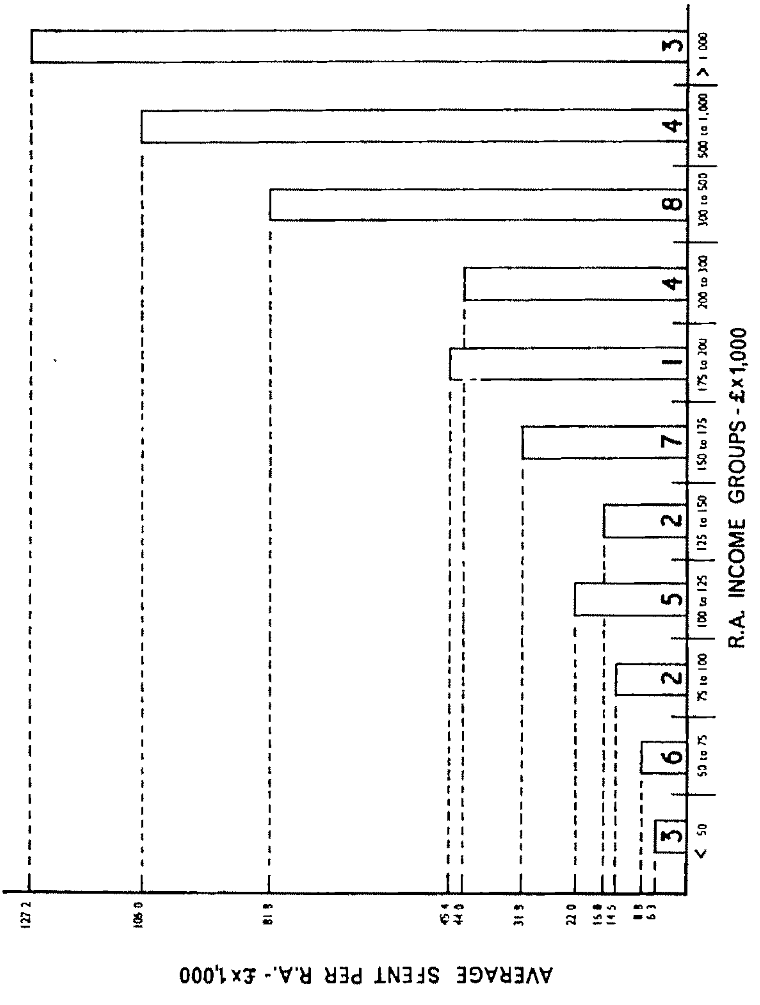
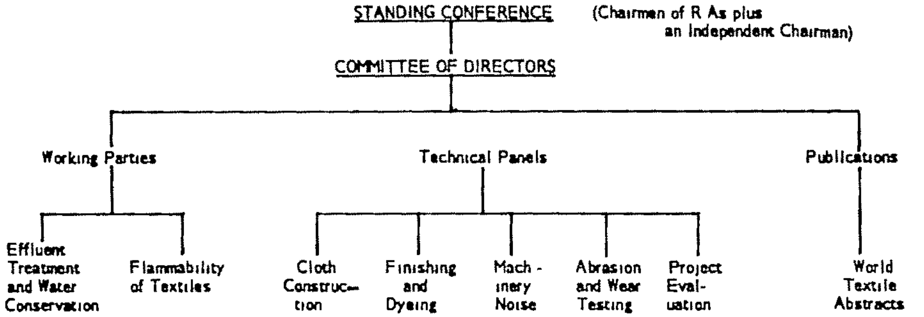


FIG. 2

STRUCTURE OF C.D.T.R.A.
and
STANDING CONSULTATIVE CONFERENCE ON TEXTILES



Chairman
Director of one of the R.As

Members
Senior staff engaged on project plus outside experts and other interested R.A representatives

Finance
Drawn from the 2% Fund contributed by the member R As of C D T.R A.

Chairmen
Director or senior members of staff

Members
Invitation to all interested R.As to second senior staff.

Finance
Borne by individual R As but, if a project emerged, could become a Working Party exercise financed by the 2% Collaborative Fund.

Administered by Shirley Institute Editorial Board comprises members from five of the Textile R As.

APPENDIX I

Composition of Building Materials Working Party

British Cast Iron Research Association.
British Ceramic Research Association.
British Food Manufacturing Industries Research Association.
British Non-ferrous Metals Research Association.
British Paper and Board Industry Research Association.
British Welding Research Association.
Cement and Concrete Association.
Coal Tar Research Association.
Electrical Research Association.
Furniture Industry Research Association.
Heating and Ventilating Research Association.
Printing Packaging and Allied Trades Research Association.
Production Engineering Research Association.
Research Association of British Paint Colour and Varnish Manufacturers.
Rubber and Plastics Research Association of Great Britain.
Timber Research and Development Association.
Welwyn Hall Research Association.

DISCUSSION

The Chairman, MR LESLIE WILSON, in opening the discussion, mentioned that several years ago he had suggested that a study be carried out of the possibility of a single information output for all RAs. He believed that this was still an attractive proposition and hoped that the CDRA would give further thought to it.

MR A. S. REID (Reckitt & Colman) referred to the practice among many RAs of giving information only to their members and asked whether there was any possibility that this restriction would be lifted. MR LEICESTER replied that the directors of RAs were generally trying to remove this practice, and it was possible that the new chairman of CDRA would be influential in this respect.

Referring to the need to get information to the shop floor, MR V. BISKE (Burmah Oil Trading Ltd) asked if there were any links between RAs and Trade Unions. MR LEICESTER replied that there were and that, in fact, some Unions had representatives on the councils of the RAs.

MR B T STERN (Wellcome Foundation) asked whether the figures for expenditure on information services included provision for overheads, and also whether RAs regarded information as an exportable commodity. MR LEICESTER said that he was fairly confident that overheads were included as this was standard costing practice among RAs. RAs were certainly keen to sell their expertise and know-how overseas, but it was important to ensure that British industry had the first opportunity to take advantage of it.

MR A. GORDON FOSTER (City University) spoke of the difficulties of feeding information to users within small firms; it had to arrive at exactly the right time in order to arouse interest. Industrial liaison officers played an important role in helping such firms, and he wondered whether the CDRA had any ideas on this problem. MR LEICESTER agreed there were difficulties here, as small firms were often reluctant to ask for information when they needed it.

MR A. R. DODD (Porvair Ltd) asked if there was any possibility of a 'package deal' subscription to enable industrial organizations to have direct access to certain services from RAs outside their normal sphere of activity. MR LEICESTER replied that he would prefer to see RAs encouraged to provide information to non-members on an informal basis, as he had been doing in the case of the textile Research Associations. Provision of cheap subscription rates would inevitably be abused. It was essential that the industries concerned should support their appropriate RAs.

MR F. H. SMITH (British Transport Staff College), referring to the difficulty of persuading small firms to use information resources, suggested that public libraries might contribute popular science features to local papers, analogous to the science columns of the national papers. In this way new developments of interest could be brought to the notice of local industry.

MR F. L. A. HANDOVSKY (Esso Chemical SA) asked about collaboration between Research Associations and their counterparts in other countries. MR LEICESTER replied that members of CDRA had visited many European countries and had made contact with interested organizations with a view to fostering collaboration of this kind.

MR W. J. FULLWELL (HERTIS) noted that many small firms felt overwhelmed by the many sources of information that were offered to them. A committee, which had recently been set up by the Board of Trade to study the problems of smaller firms, had been asking for written evidence on a range of topics, including information resources.

MR LESLIE WILSON mentioned that Aslib would be submitting evidence to this committee and MR LEICESTER said that he had recommended individual directors of RAs to do the same.

CO-OPERATION IN THE FIELD OF PATENTS

W. WESTON, CPA, MITMA

Paper presented at the 43rd Aslib Conference. University of Warwick, Coventry, 21st–24th September 1969

IN preparing this paper I was faced with the problem of not knowing how much you know about patents. I do not wish to bore those of you who are knowledgeable or confuse those who are expert in other subjects.

I have resolved the problem by selecting things which I find interesting and treating them as simply as possible. I hope that those of you familiar with patents also will find my selection interesting and that no one will be too bored.

Patents for invention

The patents I am concerned with are patents for invention and I mention this because it is often overlooked that patents, or—to give them their full title—Royal Letters Patent, are used for the grant of privileges other than patents for invention. Many of you may have been interested, as I was, to see on television the Investiture of Prince Charles at Caernarvon when the Letters Patent appointing him as Prince of Wales were read in Welsh and English versions.

For many years it was thought that patents for invention originated in England and that Section 6 of the Statute of Monopolies, which was passed on 25th May 1628, was the first Statute which authorized their grant and gave effect to what had previously been Common Law.

Venice Decree of 1474

In fact the earliest known law for the grant of patents for invention was a Decree of the Venetian Senate in 1474.

I am indebted for information on this Decree of Venice to a paper on 'The Early History of Patents for Invention', which was presented in 1947 at a joint meeting of the Newcomen Society and The Chartered Institute of Patent Agents by Mr M. Frumkin.

Mr Frumkin, in turn, acknowledged as his source the publication in 1936 by Professor Mandich of his research in the *Archives of Venice.*

The translation of the Decree gives me so much pleasure as a piece of prose and concise enactment that I ask for your indulgence in reading it to you:

> MCCCCLXXIIII March XVIIII
>
> There are in this City and its surroundings, attracted by its excellence and greatness, many men of divers origin, having most subtle minds and apt to imagine and discover divers ingenious artifices. And if it were provided that others may not make nor take unto themselves

> to increase their own honour the works and artifices they may have seen so discovered by such men, such men would use their minds, and would discover and make things which would be of no little utility and advantage to our state.
>
> Therefore.
>
> It is enacted by the authority of the present Council that whoever will make in this City any new and ingenious artifice, not made previously in our state, will be obliged to register it at the office of our proveditors of the Commune, as soon as it will be reduced to perfection, so that it will be possible to use and apply it. It shall be forbidden to anyone else in any our land and place to make any other artifice to the image and similarity of that one without consent and licence of the author during the term of ten years. And if nevertheless someone did it, the aforesaid author and inventor would be free to cite (him) before every office of this City, and the said who would have imitated would be compelled to pay one hundred ducats, while the artifice would be immediately destroyed. But our Government will be free, at its complete discretion, to take over and use for its needs any of the said artifices and instruments, under the condition, however, that others than the authors may not employ them.

If I had more time I could demonstrate to you that that Decree in a few words defines the purpose and makes provision for the grant of patents for inventions, the term of the patents, the penalties for infringement, the grant of licences, and the right of Government use for which equivalent enactments in our own times have required volumes.

One of the great attractions for me of that *Decree of Venice* is that it is a positive enactment for the grant of patents as compared with our own Section 6 of the Statute of Monopolies in 1628, of some 150 years later, which was a negative enactment being an exemption from the general prohibition on the grant of monopolies which had been so abused by James I and his predecessors.

The association of patents for invention with the grant of monopolies has in my view bedevilled the reputation of patents for inventions ever since. From time to time attacks are made on the patents system as being contrary to the public interest, if not downright immoral, and yet I have never encountered any similar criticism of copyright for authors, artists and composers.

Patents compared with copyright

But where is the difference? Invention is a creative act just as much as an artistic work and the benefit to the community is certainly more tangible than at least some works of art which I, perhaps by this a self-confessed Philistine, cannot appreciate. The difference between copyright and patents for invention is quite remarkable from the aspect of co-operation which, as the subject of this Conference, you will no doubt be relieved to hear I have now reached.

Protection by copyright for literary and artistic work is automatic in this country under the 1956 Act and internationally under the Brussels Convention of 1948 and the Universal Convention which came into force in 1955.

By contrast, protection for inventions by patents involves special application and usually elaborate and expensive procedure in each country and, in spite of considerable effort, there is very little effective co-operation on either a national or international scale. Certainly in the field of international co-operation patents for invention are a poor relation as compared with copyright. I have suggested that protection for invention has been at a disadvantage because of prejudice arising from the dislike of monopoly but this is only a subjective assessment and is unimportant because there is a real reason for the difference.

The reason lies in the definition of the scope of protection for the original work. For copyright this definition is relatively easy and involves only comparison between the original work and an alleged copy to see whether the original work, or a substantial part of it, has, in fact, been copied.

The problem of providing a simple definition of the scope of protection for an invention has not yet been solved and the mass of laws and regulations relating to patents for inventions is the outcome of different philosophies and different approaches in different countries to the same problem.

There is not even an accepted definition of 'invention', quite apart from the scope of protection which it should have. Experts can and do discourse at length as to whether an invention is an original idea emanating from the mind of one person, the embodiment of that idea in some practical form, as in a machine or part of a machine, a concept which is described and claimed in a patent specification, and which may well originate not directly from the inventor but from a patent agent's assessment and amplification of the inventor's idea, or that which might be recognized as a contribution to the sum of public knowledge after lawyers have thrashed a patent through the Courts.

I was tempted to make this the end of my paper so as to leave you with ample time to challenge my thesis which I could state as: no real co-operation in the field of patents can be expected until the problem of definition of invention is solved. However, in return for this opportunity to air my views, I owe it to you to provide some information on co-operation in the field of patents and I shall try to summarize what has been done and is now under active discussion.

Co-operative attitude in the United Kingdom

In this country there has been for many years great goodwill at a personal level and active participation officially between successive Comptrollers-General, the Head of the Patent Office; the legislature and those organizations, including the British Group of the International Association for the Protection of Industrial Property, popularly known as PIP; the Federation of Patents, Designs and Trade Marks; my own Institute, the Chartered Institute of Patent Agents and the CBI and other industrial associations. Our present patent law is basically the Act of 1949 but there is now sitting the Banks Committee (Committee to Examine the Patent System and Patent Law) whose report it is hoped will be published next year. The Banks Committee is composed of people eminent in industry, the law and the patents profession, and they have received carefully prepared and presented evidence from many interested sources. When it appears, the report of the Banks Committee will represent a major co-operative effort and I am hopeful that the result will be a simplification and clarification of our patent law.

Frustration in the USA

By contrast, and I hope my American friends will forgive me, attempts to simplify and improve the patent law in the United States, by the introduction of Bills in Congress, have so far been brought to nought because of the conflict of philosophy and interests in the USA. In particular, a proposal to bring the

USA into line with the rest of the world, by making the patent application date the effective priority date, now seems to be a dead duck. I have recently heard that another US Patents Bill has been introduced and it is to be hoped that this will receive more co-operative consideration.

The United States Patent Office has, however, made a substantial practical effort by photographing all their own patent specifications on microfilm and is now engaged in producing them in the form of so-called apertured cards. These are standard punched cards, giving the basic formal information, and each serving as a mount, like a picture frame, for a microfilm showing an abstract and up to eight pages of the specification and drawings. For longer specifications, two or more cards are used.

These apertured cards will eventually be sold very cheaply, for customers to use with a magnifying viewer, and enlarged prints can be made from them for ordinary reading.

International systems

The only international patent system actually in operation is the 1962 Agreement of the African and Malagasy Industrial Property Office which, by a single procedure, grants patents which cover the thirteen States which are parties to the Agreement and which were all former French Colonies. The Agreement is basically a re-enactment of the French Law under which the territories were covered by a French patent.

Denmark, Finland, Norway and Sweden in 1967 agreed and adopted a new patent law which is substantially the same in each country, and it is intended that it will be possible eventually to obtain a Nordic patent covering all four countries. Unfortunately associates in those countries, with whom I have had discussion, are not optimistic about the real co-operation which would be required to make the Nordic patent a reality.

I shall not weary you with a recitation of all the international agreements which have been made and operated, with varying degrees of success, by various groups of countries, but I should not omit an outline of what is by far the most successful and useful example of international co-operation on patents.

International Convention

That is, of course, the International Convention for the Protection of Industrial Property, which originated from the Convention of Paris in 1883, and was revised at Brussels in 1900, at Washington in 1911, at The Hague in 1925, in London in 1934, and at Lisbon in 1958. There was a further revision of the Convention at Stockholm in 1967 but the provisions there agreed are not yet effective. Membership of the International Convention is almost universal although all countries have not ratified all the revisions, and a notable addition to the contracting countries was USSR in 1965.

The Convention deals not only with patents but with designs, trade marks and other industrial property but, to keep within my text, I shall mention briefly only the main provisions of the International Convention which concern patents.

All the contracting countries undertake to grant patents without discrimination on grounds of nationality, and anyone first applying for a patent in one of the contracting countries can claim his date of filing as the effective date for priority of his rights in any other country in which he files a corresponding application within the following twelve months.

The effect of this is that a patent application filed in one country enables the applicant to publish information on the invention, without risk of his rights being pirated in another country, provided that he files within twelve months a patent application in each country in which he desires protection. Patents granted under the provisions of the International Convention have the same life as domestic patents and there are safeguards against revocation of a patent on the ground that the invention is not being manufactured domestically but only imported.

The use of inventions on ships or aircraft temporarily visiting a country in which a patent exists shall not be liable for infringement of a patent.

Inventions which may be shown at international exhibitions before any patent application has been filed are given protection provided that patent applications are filed within certain time limits.

IPC

There are other areas of international co-operation on patents which merit attention. There is the European Convention on the International Classification of Patents for Invention, concluded in Paris in 1954, and under which about half of all patents now being granted are indexed. I understand that as from 1st January 1970 it is intended that every published patent specification will bear an International Classification mark. It is probable that many of you are far better informed than I am on the International Classification.

ICIREPAT

This is an acronym for the Paris Union Committee for International Co-operation in Information Retrieval among Patent Offices. The work of this Committee is done by officers of the Patent Offices of all the major countries and BIRPI acts as its Secretariat.

Work has been going on for some five or six years and, after an extensive review of the problem, each Patent Office is now engaged in producing a punched card search system of its own specifications. By exchange of sets of cards each Patent Office can build up its own international search system, of which each national part has been prepared by the respective country's own experts, language difficulties are avoided by the punched information and machine sorting can be used with transfer to computer as a longer term objective.

The work of ICIREPAT involves many problems but those engaged in it claim to be learning quickly, including learning to work together, and progress is being made. For example, they have found that it is better to tailor a flexible system to suit the subject matter handled than to strive for a fixed system to which subject matter must be adapted. Efforts on the practical side include designing a standard format for microfilm specifications.

Present projects

In the time remaining I shall deal with two projects of great importance and present activity in international co-operation on patents: the proposed Patent Co-operation Treaty and a proposal by the Common Market countries to set up a European system for the grant of patents.

PCT

The proposal for a Patent Co-operation Treaty (PCT) originated in September 1966 at a Geneva meeting of the Executive Committee of the International Union for the Protection of Industrial Property; that is, our old friend the International Convention, when the Committee adopted a USA proposal that the Director of the United International Bureaux for the Protection of Intellectual Property (BIRPI) should undertake a study with the object of reducing the duplication of effort in obtaining patents for the same invention in several countries.

From that recommendation stemmed a series of draft treaties, official and informal conferences, and international meetings, with the result that there was produced in July of this year a full draft text for a treaty and regulations which will be discussed by a study group of experts in Geneva in March of next year, 1970, and submitted to a Diplomatic Conference for adoption in the following May or June.

Under the PCT, if adopted, an organization will be set up through which an applicant for a patent can obtain an international search to test the novelty of his invention, nominate his own selected list of countries in which he would like to have a patent, and further obtain the result of an examination of the patentable merit of the invention.

Under the PCT, there will be more time, up to twenty months instead of twelve months, for an applicant to decide whether or not he wishes to obtain patents in various countries and also the cost of translation of his specification and possibly of examination in individual countries can be deferred, reduced or saved.

The Draft PCT and Regulations are long documents, comprising fifty-five closely printed pages, and even the Official Brief Summary takes fifty paragraphs and footnotes, but here is an outline.

The contracting States will form the International Patent Co-operation Union which will operate through an International Bureau, which will be BIRPI or its successor at Geneva, intended to be financially self-supporting but with any deficit to be made up by the contracting States.

National Patent Offices will work with the International Bureau and receive international patent applications of each of which, after formal examination, a copy will be transmitted to the International Bureau and simultaneously to an International Searching Authority.

It is probable that there will be five searching authorities, namely the International Patent Institute (IIB) at The Hague and the Patent Offices of West Germany, Japan, USSR and USA.

Within three months, a search report, consisting simply of a list of citations, will be sent to the applicant and he will then have the option of abandoning or maintaining his application, with or without amendment, within two months.

A copy of the application and search report will then be sent to the Patent Office of each country nominated by the applicant who will then be required to provide translations and pay the fees for each country. Each country will then process the application according to its own requirements.

The International Bureau will normally publish each application eighteen months after the original filing date in the country of origin.

The procedure so far is called the First Phase and the advantage claimed for it is that the applicant can file a single application in one language and one set of fees to cover potentially any number of designated countries.

Under an optional Second Phase, after the search report, the applicant can request a preliminary examination as to whether the claimed invention is new, not obvious and industrially applicable. In the course of this examination, for which four months is allowed, the applicant can amend his application and correspond with the examination authority.

The searching authorities will also be examination authorities and in addition other Patent Offices, including that of the United Kingdom, will operate as examination authorities.

The examination report will then be sent to each of the countries nominated by the applicant, who only then will be required to pay the respective fees and provide translations for the individual countries.

All grant of patents, following either Phase 1 or Phase 2 procedure, will be a matter for the designated countries individually and subject to their existing laws on patents.

Europatent

The other proposal, for a European patent, is embodied in a memorandum prepared in Brussels in May of this year after a study by the six member States of the European Economic Community of the possibility of setting up an international system for the grant of patents.

It is proposed to set up a single European Patent Office at which a patent application can be filed and result, all being well, in the grant of a European patent which would in effect correspond to a patent in each of those member countries selected by the applicant.

It is envisaged that the operation of a European patents system through a single European Patent Office could be co-ordinated with the operation of international search and patentability examination through the PCT.

The European patent would not be limited to the Common Market countries but would be open to other countries.

In October this year, 1969, the European patent will be discussed at an Intergovernmental Conference in Luxembourg.

Both the PCT and the European patent, which are compatible, could represent a useful advance in international co-operation on patents but the end result of each of them, so far as actual patent protection is concerned, would be equivalent to the grant of an individual patent in each country and subject to the laws and idiosyncrasies of each country on the validity of the patent and the scope of protection of the invention. We shall still be left with the problem of definition of invention varying from country to country and even from Court to Court in any one country.

Conclusion

I am not optimistic about real progress on co-operation in the field of patents until individual and national prejudices can be put on one side and agreement reached on an international basis as to the meaning of invention and the effect of a patent.

This objective has long existed and some good efforts have been shelved but the EEC countries, in their memorandum for a European patent, at least envisage eventual adoption of a uniform legal system applicable to a European patent for the whole territory of the EEC.

I admire the efforts which are being made to set up machinery to simplify the processing of patent applications and it may well be that this is a necessary step towards the objective of a real international patent. What I would like to see, however, is a long stride forward in a genuine effort to reach international agreement on the effect of patent protection, comparable to the Universal Convention on Copyright.

DISCUSSION

MR REVIE (National Engineering Laboratory) (NEL) said he liked Mr Weston's sense of wit. In that sense he would be interested to hear what his reactions would be if, in the light of a recent bit of paper, the Patents Office Library were translated across the street from Holborn to Bloomsbury. More seriously, with regard to his apprehension as to the working of a Nordic Patents Group, Mr Weston might be interested to know that the Nordic countries had co-operated in the setting-up of a joint Nordic Group for Steel Regulations (NGS) to specify design stresses for steels. MR WESTON replied that he would hate the Patent Office Library to be moved. If it had to be moved it was essential that it should be within easy reach of the Patent Office public search room.

MR CAWKELL (Institute for Scientific Information) said that he seemed to recollect, in the case of the Bell/Westinghouse Transistor patents, that the companies failed to collect royalties from the Japanese. Did Japan stand outside any existing international patent agreements? He also asked if Mr Weston could say something about prior publication, and about confidence in particular. MR WESTON replied that he was not familiar with the transistor case, but there was no special provision in Japanese patent law. On the question of prior disclosure the only safe rule was to say nothing. If it was really necessary to consult somebody, then it must be made clear that it was being done in confidence.

MR MARNS (Atomic Energy Research Establishment) asked if a person wished to file a patent application in several countries, was it necessary to submit the application in the languages of those countries? What set-up was there for providing translations? MR WESTON replied that it was necessary to file applications in the language of the country concerned. The translation was usually undertaken or commissioned by a patent agent in the country concerned.

MR BISKE (Burmah Oil Trading Ltd) asked if Mr Weston had any comments to make on the fact that any publicly available document, such as book, periodical, etc., could constitute prior publication, but not a British patent more than fifty years old. This span went back to a period when inventions then made might still be beneficial and thus repatented. MR WESTON replied that in most cases it was possible to look for a parallel publication, such as an abstract, and cite this in lieu of the patent.

LOCAL TECHNICAL INFORMATION CO-OPERATIVE SCHEMES

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Paper presented at the 43rd Aslib Annual Conference, University of Warwick, Coventry, 21st–24th September 1969

EARLY last year a Parliamentary and Scientific Committee consisting of Members of both Houses of Parliament and representatives of various scientific and technical institutions issued a report on the collection, storage, dissemination and retrieval of scientific and technical information. Some simple, logical and clearly stated criteria emerged from this committee's deliberations. I think that they should be quoted and emphasized as they all have direct relevance to the administration of local co-operative information services.

(*a*) There should be a comprehensive network of stocks of scientific and technical information, whether held in libraries or elsewhere, and there should be an adequate and trained personnel to staff and exploit them.

(*b*) The most modern methods of operation should be devised for their administration and in order to give access to them.

(*c*) There should be comprehensive and up-to-date guiding systems to their coverage and contents.

(*d*) Managements should be made fully aware of these services, willing and able to tap their resources and to encourage their use.

(*e*) Finally, and most importantly, the role of government departments in scientific and technical information retrieval, storage and dissemination should be clearly defined. These departments should make every effort to see that these objectives are reached.

All these criteria are fundamental to the functioning of local co-operative information services.

Historical survey

Before examining these points in more detail it may be salutary to trace briefly the history of local technical co-operation. It was in 1932, when the then city Librarian of Sheffield, J. P. Lamb, presenting a paper to the ninth Annual Conference of Aslib, made the first suggestions to set into motion what was to become the first local co-operative organization. This is how Lamb, one of the most progressive of public librarians, stated the case:

> In Sheffield, where many firms have large research staffs, there are frequent requests for periodicals on technical subjects. Although a wide range of technical journals is stocked in our technical and commercial department, it is astonishing how many of these requests have to be met by loan through the National Central Library. This leads to an interesting suggestion. Most works libraries carry a fairly extensive selection of technical journals dealing with their products and methods, many of them of a very specialized type. There would be very obvious advantages in a pooling of those periodicals with the public library as a medium of exchange.

After this Conference Lamb wasted little time. A preliminary meeting of interested bodies was held later that year and in February 1933 the first local co-operative scheme, SINTO, came into being.

Apart from this notable exception co-operative information schemes are a post-war development and, in fact, seventeen years after the formation of SINTO only one more service had commenced. This was at Manchester in 1948, a service still very active although it does not allow itself an abbreviation or acronym. In fact, I have suggested to Frank Taylor, the Manchester Technical Librarian, that should he be 'praying' for an acronym then MANTIS might be a suitable answer.

The war was, of course, to some extent, responsible for this hiatus in development, but it does seem quite remarkable that the pioneer should for so long be alone in this field. One of the by-products of the war was that huge upsurge of technical research and development which ushered in the present information-conscious era and resulted in the so-called 'information explosion'. And it would seem that the necessity of harnessing this man-made mass of scientific and technical literature was one of the prime movers in the formation of the local information group. Another reason may be found in the realization that, almost without exception, local groups are based on the public city or county library service and it was perhaps the public library, with its anachronistic reliance on the Regional Library Bureau schemes of co-operation, which first realized the inability of such schemes to meet the increasing demands being made by the scientific and technological community. It was also this very inability which caused the problem to be passed to the Science Museum Library and eventually lead to the formation of the National Lending Library. Thus, in most cases, the public library was the progenitor of the local co-operative scheme. It has been suggested that the schemes were formed to the greater glory of the public library service but it was in fact the burden of scientific and technical inquiry being placed by industry on the public library which made the library turn back to industry itself in an effort to solve, to some extent, the need for the rapid interchange of information. Early in 1964 representatives of thirteen library co-operative schemes met at Nottingham to discuss mutual problems. At this meeting it was resolved that the thirteen groups represented should form the 'Standing Conference of Co-operative Commercial and Technical Library Services'—I defy anyone to make an acronym out of that! Among the items which have at various times been discussed by the Standing Conference are:

(*a*) The role of the industrial liaison officer in the orbit of the local co-operative group—it was the meeting's concern that there should be full co-operation with the ILOs at that time being appointed, and that all unnecessary duplication of effort should be avoided.

(*b*) It was thought at the time possible to devise some form of application to the appropriate government departments for a grant-in-aid in order to expand the services provided by the various co-operative schemes—but as the industrial liaison service was still being set up the time was considered inopportune. It has never been opportune again.

(*c*) As a result of discussions on new private company registrations a mutual scheme for indexing the Daily List of New Companies was devised. Currently, ten libraries are co-operating in this project—the indexing period being three months per library.

After a period of dormancy a meeting of the Standing Conference was held in Coventry in July 1968 when it was decided that its members should in future meet at least annually. A further meeting formalizing the conference and levying an annual subscription took place in Liverpool earlier this year. The title of this organization is now 'Standing Conference of Co-operative Library Information Services' (SCOCLIS).

Functions

When the setting up of a local service is being considered, there is but one basic and simple question to be asked—is there a need? This simple question, however, must be answered by a close study of user requirements. Once they are established there are perhaps only two basic functions of a service:

(*a*) To ensure that those who could benefit from new information should be made aware of it. This, of course, entails dissemination—newsletters, book lists, bibliographies and, very importantly, direct liaison visits.

(*b*) To ensure the establishment of adequate communication or liaison between member libraries and organizations. Neither of these two functions can be achieved without the aid of trained specialist staff. This factor is particularly limiting the work of many groups today, and it cannot be too strongly emphasized that without this qualified specialist and enthusiastic staff you may as well shut shop.

Stock

Assuming a user survey indicates the need, and assuming you have the necessary staff, an adequate stock at the headquarters library is essential. I would suggest the following basic categories:

(1) An extensive range of abstract and bibliographical publications.

(2) A balanced range of technical handbooks, dictionaries—obviously having due regard to the nature of the community to be served.

(3) A comprehensive collection of periodicals with adequate files and with the necessary retrieval indexing publications—*Engineering Index* and *British Technology Index* at the very least.

(4) Sets of standards, specifications and patent abridgments, if possible. There

should be a complete collection of British Standards and other specifications, e.g. DEF, DTD and DIN would be most useful.

(5) A suitable range of government publications—with the necessary bibliographical aids.

(6) As much trade literature as possible. Although this is a difficult collection to maintain and administer, not all of us being as blessed as Patrick Barbour, with his seventy mini-skirted assistants, there seems little doubt that this is the field where the microform-computer dialogue will show the most positive results.

(7) As comprehensive a collection of scientific and technical text-books as possible, due regard being taken of clientele and of other services offered in the area.

(8) A thorough-going and up-to-date quick-reference information section. I would hazard an estimate here that at least some 450 books should be in this particular section—and I'm sure if I err, it is on the low side.

Only when the stock can be adjudged adequate to meet assessed user demand should the more housekeeping routines of group formation be put into motion.

Housekeeping functions

Once the decision is taken to form a group it is necessary to look at a number of simple yet basic and important points. This being particularly important if you decide on a formal constitution:

(*a*) Name of organization

A glance at the various acronyms and abbreviations may reveal a certain facetiousness—I have no need to quote examples—but a clear, concise, mnemonic acronym is a most useful device in matters of communication, publicity and stationery.

(*b*) Headquarters

In many conurbations it would seem that the most comprehensive collections of media relating to modern technological innovation are housed in the libraries of the colleges of technology, but it is certainly questionable whether such libraries are geared to the precise liaison needs of a co-operative organization. Colleges have a primary teaching function and in general they are not equipped with staff or stock to handle inquiries other than from their staffs or students. With their technical depth and particularly with the expertise of their teaching staffs colleges are a most valuable member of any local co-operative group, but it is my opinion that the public library, with its traditional impartiality of service, is the right place for the headquarters. Another important factor here is the times of availability of the public library service—a headquarters should be able to offer the maximum availability.

It should perhaps be mentioned here that the local industrial liaison officer is usually based on the college of technology and the group should maintain close contact with him—although I find him a most elusive individual.

(*c*) Membership

I feel that no rigid set of rules should be laid down regarding who may or may not be a member of a group. Looking at the constitutions of the various organizations one sees a great deal of rather institutional or anachronistic limitation, e.g. 'firms maintaining a properly constituted works library under the charge of a works librarian or other responsible officer'.

Are we going to set ourselves up as arbiters? Can we define 'properly constituted'? I know of many excellent works libraries in the charge of a works librarian, which I would hesitate to call properly constituted in my definition of the term. 'Establishments which aim to provide a minimum of twenty-five books and three periodicals.' Under these rules my own home could certainly become a member—why twenty-five and why three—and what is the quality of the material? 'Firms and institutions required to have a librarian in charge of their libraries.' If this rule were insisted upon we would lose the Chamber of Commerce, the Building Information Centre (under a research architect) and probably those very firms who will be inspired to appoint a librarian or information officer when the depth and complexity of information handling, storage and retrieval is really brought home to them by the services of an efficient group.

SINTO in laying down a minimum qualification of fifty books and ten current periodicals are of the opinion that this will act as a challenge to firms to set up libraries and to develop them to a reasonable standard. LINK, however, take a slightly different view. Of their ninety-four members, most have no libraries and, indeed, consider systematic information collecting with astonishment. This latter category, however, is steadily beginning to exploit the library resources.

May I quote, from HERTIS, what I consider the best ruling to be laid down on membership: 'Any industrial or commercial undertaking, local government department or individual capable of benefiting from the service'.

(*d*) Geographical limitations

Is it not prehistoric to limit a service to organizations 'within the city boundaries'? Perhaps we are at last becoming more enlightened in this matter, although one or two groups still retain this boundary limitation. It must surely be realized that today we co-operate or fail, 'ratepayers' and all, and if help is extended to organizations outside the somewhat arbitrary boundary line of our authorities it cannot fail to be reciprocated to mutual advantage.

There is but one properly constituted local co-operative group in a vast area between Coventry and London; how can we as a profession put geographical sanctions into practice when many organizations in this area come to us for help? If we had said 'no' to these requests we (CADIG) would have lost the services of, amongst others, a fine library of agricultural literature, a comprehensive collection of management material, an excellent information service on 'bearings' and other valuable libraries—valuable to our own ratepayers. Where assistance is asked for let us attempt to give it to the best of our ability and within our own time limitations—our own service cannot fail to benefit.

(*e*) Subscriptions

This naturally leads to one of the problems of local group administration—whether or not to charge a subscription. This is obviously a matter to be decided upon immediately a service is contemplated and I think that there is little doubt that the present financial climate is favourable to a charge being made—how much longer in fact are we going to be able to offer a 'free' public library service?

Present subscriptions vary from £1 1*s* to over 100 gns for the services offered by LADSIRLAC, and of course the levying of a subscription is one answer to our perennial ratepayer's complaint of expending an undue amount of one's finances on industry—particularly should that industry happen to be outside the rateable area.

Subscriptions may be used for creating a house style in stationery, for postage costs, for the arrangement of meetings and particularly for publishing purposes, e.g. newsletters, a directory of members, bibliographies, etc. It must be admitted that most of us do not like asking for more money for more projects, but even a modest subscription based on a careful costing of publication costs, meeting expenses, etc., can be of great assistance in the progressive administration of a service. The better the service provided the more members you will get and the more expensive it is going to be to maintain.

Services

There are several fundamental services which must be offered:

(1) The creation and maintenance of a location list of periodical titles. Quite a few groups publish these lists, e.g. SINTO—a list prepared from punched cards covering some 4,500 titles—costing £3 3*s* plus £1 5*s* for two supplements published during 1968. This, I think, will give some idea of the drawbacks in publication—it is costly both in time and money and such lists very soon get out of date. It is for these reasons that a card index maintained at headquarters, where it can be quickly amended, is usually considered the best proposition. A small administrative point here: it should be written into the rules that each member informs headquarters at least annually of periodical holding variations—not only noting new titles and holding amendments but particularly mentioning those titles which they have ceased to take. Many members here seem to expect a certain clairvoyance by the headquarters' staff.

It has been often suggested that since the inception and growth of the National Lending Library service local periodical interchange has lost a lot of its value. But speed is still a valid factor—there are often local courier services available and much local interchange can take place on the same day and sometimes within the hour. Such a service cannot only be quicker but more economical and one must particularly take into account the present postal climate of the country.

It may be mentioned also that the definitive index of periodical locations is of great value when it comes to the discarding and reallocation of files. It is always possible, by reference to the index, to ensure the proper maintenance of a comprehensive collection within the area.

In almost all local services a union list of books is a completely unviable proposition financially, but those libraries either on or considering computer cataloguing will be at an advantage. Their membership may either be supplied with a complete catalogue or perhaps a modified SDI service—printing out those profiles applicable to the interests of each member. Although at an elementary stage in computer cataloguing at Coventry—a print-out and up-dating service of the CADIG Union List of Periodicals is now under active preparation.

(2) Directory of Membership and Resources

Another essential service which must be constantly updated. As it is the one publication which is soonest out of date it should preferably be in loose-leaf form to allow for amendments to be inserted and extracted where necessary.

Directories of groups vary from simple lists of member organizations to the more comprehensive publications listing a substantial amount of information on resources. The latter type are usually valuable outside the area which they serve and a collection of such directories can be most useful. Many of the members of our local groups are not members of a professional library or information association and these directories may be the only publications in which their services and resources are indicated. It will of course be realized that the more information one can pack into such a directory the less pressure are the members going to put on headquarters for that information.

In the usual entry of the member's name, address, telephone number, etc., let us have the *name* of the representative. Not director, librarian or information officer—but his or her name. This personalization of the service is important—often members need the sense of being recognized and belonging, particularly in the small firm, where it is often necessary to dispel a mild form of inferiority complex in the librarian. No doubt also many of us have passed from one directory which lists the director of a service to another directory which lists his name so that we can commence our letter Dear Mr . . . instead of Dear Sir. It is sometimes necessary to go then to a more personal directory so that one can write Dear Bill!

Another important facet is the matter of internal communication and a not infrequent complaint is that of important information finding its way into the managing director's waste-paper basket because he's never heard of HERTIS or SINTO.

Many directories give a rough idea of the stock of each member—usually a *very* rough idea, and I would question the need for this information. It is all very well to say that such and such a group has 2,000,000 books and 10,000 periodicals at its service but once again the smaller firm may feel a certain diffidence about their entry revealing fifty-two books (we think) and seventy periodical titles (perhaps). And in any case quality is once again the important factor here. Times of availability are useful, as is whether a photocopying and telex service is available.

In the resources sections, as well as listing the locations of the most frequently requested types of material such as standards, patents, abstracts, reports and series, a very useful few pages may be devoted to a list of members' subject interests other than those implicit in the title of the member. Many firms have fringe topics on which they have built up small but specialized information collections and an index of these interests can be a very important guide to less obvious material.

To sum up: a directory is essential for the proper functioning of a service and it must be kept up to date. Keep the information in it to essentials and make sure the members are aware of the necessity of informing headquarters of any amendments.

(3) Meetings, courses, publications

The first question to be asked when considering the arrangement of a meeting—'is your meeting really necessary?' I think we would all agree that there are too many meetings—some organizations think it incumbent upon them to put on a meeting, cast around vaguely for someone to speak on something—have a consequent small attendance and then start complaining about the apathy of members.

Surely the best approach is to put on a meeting when a subject demand becomes apparent; for example, I would suggest the current vogue in commercial microfilm information retrieval systems, metrication, etc. Get somebody good to speak, arrange good publicity well in advance and keep such meetings to a minimum. The best way is to ask members to tell you what they want—and once the meeting is on, not to be too parochial; let us throw open our doors to other interested persons, that this may be yet another way of publicizing the importance of our job.

Courses

One form of extra-mural activity the headquarters of a local co-operative group is particularly suited to is the arrangement of short educational courses. As a direct result of the information explosion it is paramount as a profession that we, young and old alike, adopt a policy of continuous education—that is the one main reason we are at this conference. We are all familiar with the several types of Librarian/Information Officer running the libraries of smaller organizations and two of these types should particularly concern us. Firstly, the young typist/secretary who suddenly finds herself works librarian, and secondly, the older man—possibly engineer or researcher—who, seeing the need for a properly organized information service in his firm, is delegated to that task. It is usually the case that the firm does not belong to a professional librarian's association, thus precluding the staff being sent on courses; it is usually true also that management—ill-advised and ill-informed as it is—is not willing to send such staff to courses which are expensive and mean the closing down of the one-man information centre.

The co-operative service headquarters with its stock, its expertise and its relative convenience geographically is thus the ideal location for short educational courses. This is not the occasion to discuss details of what form such courses should take, but it is our experience in CADIG that day release is the most acceptable method, and the opportunity is taken to show those attending the course how other varying types of library and information service are administered.

Publications

Apart from a directory I think the one essential publication is some form of newsletter. Preferably quarterly, this may incorporate directory amendments, new material added to headquarters or available in members' libraries, news of other groups, of the LA and Aslib—remembering, as I mentioned before, that many members do not belong to either organization. Try, if possible, to solicit material from members for inclusion—and the best of luck! Remember that once you accept the position of editor you become writer, editor and publisher of your newsletter.

Current awareness publications are almost certainly the best form of dissemination service any headquarters can give but very few groups are able to offer this, basically, I think, entirely owing to the time involved. HERTIS, with their weekly card service to industry on nominated subjects from periodical articles and report literature, is a good example of this type of activity.

To be fully efficient current awareness services must be current and if staff time is not available it is best not to attempt such a service. It should be possible, however, to publish occasional retrospective bibliographies. Examples of such bibliographies may be seen in those published by HATRICS, e.g. *Containerization* and *Marketing in the Sixties,* and by CADIG, *Fluidics, Explosive Techniques in Engineering* and *Metrication.* Why do groups publish such bibliographies? The main reason, I think, is that by their very nature the headquarters are made aware of the very varied demands made by the users. All our own bibliographies have been produced as a direct result of these demands.

Headquarters, too, should be tuned in to the best information sources in its area of coverage and this is one way in which the individual member can really participate. Let us not forget also that any group, or library for that matter, should be *seen* to be active and, apart from their primary function, all publications are important as instruments of propaganda and in this context also should be made as attractive as possible in format.

Schemes

During the course of preparing this paper I attempted to contact all the known—and some unknown—technical co-operative schemes. I feel that there has been not a little misconception as to who is and who is not a technical information interchange scheme; a list of schemes published in the Aslib *Directory,* for instance, is misleading to a point. For the record, I approached thirty-nine groups and received thirty-eight replies. Of these thirty-eight, twenty-nine may be said to be really active. There are approximately 1,500 members of the groups.

Conclusion

I hope that my foregoing remarks will at least have sorted out some of the apparent confusion and misconception about the work of local co-operative schemes. I feel that it might be a worthwhile activity of either or both of our two senior professional bodies to set up a working party to investigate the 'state of the art' of local technical co-operation today. Such a party might not only draw up a set of recommendations and standards for the guidance of both public and special librarians in procedures to be followed—not just in the administration of local groups—but might also lay down guide-lines as to the future directions these groups might follow. For too long it seems that both associations have been content to 'let nature take its course' and consequently growth has been largely haphazard and unplanned.

Those involved in the administration of a group don't have to be told why such a service is necessary—it is always more than apparent—and it seems that in many ways we are pioneering new paths where our associations fear to tread. We are attempting to fulfil an ever-growing task—to supply a continually expanding technology whose information needs are being more and more clearly expressed and defined but which has no 'centre of excellence' to which to direct its demands. It is this 'centre of excellence' which is the real need, the definitive place to go for information—obviously all the information cannot be in the one place, but, at the very least, the expertise will be available to indicate the source of retrieval.

I started this paper by quoting some criteria—one being the necessity for the role of government departments in scientific and technical information retrieval and storage to be clearly defined. If after the words 'government departments' we add '*and* our professional organizations', and by this means we achieve a unified directive as to how we are to progress in the administration of co-operative, scientific and technical information dissemination, then I feel we shall have made a major contribution to the progress not only of our profession but to the well-being of the country's industry and research.

DISCUSSION

MR R. SPENCER (LADSIRLAC) explained the scale of membership subscriptions for his organization, which ranged from 3 to 100 gns, depending on the extent of usage, especially of the loan service. It was important that services for answering technical inquiries should be developed, rather than concentrating too much on loan services. MR ATKINS commented that he did not favour subscriptions based on intensity of use; one usually found that the largest firms were the largest users anyway.

DR D J. URQUHART (NLL) said that in many places, for example Aberdeen, co-operation was achieved on a less formal basis than in schemes to which the speaker had referred, and asked at what point it was considered necessary to introduce a formal basis for co-operation. MR ATKINS replied that CADIG had begun informally, but because of the lack of public relations many potential members had not known of the existence of these arrangements. He thought that greater efficiency resulted from formal schemes which, he stressed, were not only for loan interchange but also provided services for those who did not have ready access to national organizations.

MR H. MCCALL (Department of Agriculture and Fisheries for Scotland) said that a formal scheme was to be set up in Aberdeen in 1970. This would be called ANSLICS (Aberdeen and North of Scotland Library and Information Co-operative Service), and would be run by the library staff of Robert Gordon's Institute of Technology, with the assistance of the Institute's ILO.

MR J. T. GRAHAM (Watford College of Technology) asked to what extent were the organizations mentioned sensitive to information problems which could not be solved from published information. MR ATKINS said that schemes based on public libraries were usually document-based, but there were notable examples, such as HERTIS, where the support of college staff made it possible to provide consultative help for technical inquiries.

DR URQUHART asked Mr Atkins to suggest to the Standing Conference that it should consider how co-operative groups could develop courses on the use of technical literature for scientific and technical staff in member firms. The NLL would be willing to help in running such courses for which there was known to be a demand.

PURPOSE IN CO-OPERATION

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MAN, although generally described as a social animal, is not particularly well equipped for co-operating with his fellows. Co-operation implies willingness to surrender some freedom of action in order to promote the common good of the group, and although we exhibit this kind of behaviour throughout our lives, we do so only in response to pressures which are such that any other form of conduct would be intolerable.

We are basically aggressive and competitive and, indeed, in Western society, competitiveness is regarded as a social virtue. Nevertheless, I doubt if anyone really believes that unrestrained competition is a favourable factor in the evolution of a sophisticated culture. Co-operation does not come naturally—we have to learn how to do it, and the process is a painful one and the end product far from perfect. A co-operative system is a highly ordered system with a tendency to relax to a state of lower order unless something positive is done to prevent it. The parallel with the second law of thermodynamics is rather a good one because in both cases the only way of keeping the system at the highly ordered level is to perform work.

In general, co-operation is regarded as a means for promoting objectives, necessary to the development or existence of a group of individuals which cannot be attained by individual action, and this is certainly how the people who created Aslib saw it. They were convinced of the need for an organization which would enable them to do certain things together which could not be done separately: they were also aware that unless co-operation is channelled inside some formal structure it tends to degenerate into more co-existence. Hence the establishment right from the beginning of machinery to enable co-operative activity to develop along the desired lines and to remain viable over an indefinite period. Their aims are set out in general terms in the Articles of Association but more specifically it can be seen that the machinery they set up has three main purposes:

(1) To discover and correlate the needs and attitudes of members, to bring these needs and attitudes to the attention of those who should be aware of them, and to ensure that they are recognized and account taken of them in any external developments which may, in any way, impinge upon the work of members.

(2) To provide communally certain services which individual members could not provide for themselves and could not obtain elsewhere and to offer a formal mechanism by which these services can be used.

(3) To provide an environment within which smaller groups with special needs—regional, subject or other—can operate economically by having the resources of the main organization at their disposal; the latter co-ordinating the activities of these groups so that available effort and resources are used effectively.

Such machinery is common to most kinds of association activity in this country. The essential requirements are, first, a fairly large group of people who are willing to identify themselves with the aims of the organization and support its activities; secondly, a necessarily smaller group who are willing to spend a good deal of time and effort working on a voluntary basis to actively further the objectives of the association; thirdly, a permanent staff to act as a focus and to provide the communication channels which are essential for co-ordinated action. The aims and objectives must be clearly defined so that they can be understood not only by the people within the association but by those outside as well.

The picture presented is essentially a static one—a cross-section, if you like, of the four-dimensional organism which is Aslib, beginning in 1924 and extending to the present moment and into the future. In this paper I am more concerned with the dynamic aspects, i.e. the evolution of this organism in a continually changing environment.

Evolution is concerned with growth and change, the latter being mostly a process of adaptation to meet naturally occurring changes in the environment. Growth itself tends to introduce variations in the roles played by the constituent parts. For example, in the early days of the Association, when the membership was small and closely knit, it is likely that the role of the permanent staff was a comparatively minor one. However, as Aslib grew and the membership expanded, becoming more diverse and more demanding in its requirements, some strengthening of the central administrative machinery became desirable if true co-operative activity were to be maintained and the role of the permanent staff became a more positive one. I believe that such a process is necessary if any real progress is to be made, but I am aware that it is not without its dangers, for the central mechanism and the people who operate it can come to be regarded as a thing apart. When this happens members may begin to dissociate themselves from responsibility for the conduct of the Association, and if such an attitude were to be carried to extremes the future of the Association would be very bleak indeed. I do not think there is anyone on Council, or amongst the staff, who is not conscious of this problem or who would not do everything in their power to counteract such a tendency, but in the long run the solution must lie with the membership. Aslib is not just the Council or the staff at Belgrave Square, but the whole of the membership, corporate and individual.

Change in response to external influences is also an important evolutionary factor. For example, after the war, when Aslib first obtained grant aid from Government, it brought with it a recognition that Aslib's work was of importance, not only to the members of the Association but to the community at large. When Aslib accepted this support it also accepted a responsibility to the community outside the membership and with it the possibility of conflicting aims. Many of the services provided by Aslib could be just as useful to non-members as to members and it could be argued that it is in the country's interests that such services should be available to all. The Research Associations have the same problem. But this would mean that they would have to be entirely financed from national funds and in the process the fundamental idea of co-operation would be lost. In practice, acceptable compromises have always been found to meet this kind of situation but one has to remember that it is not a static situation: new aspects are always emerging and new solutions must be sought for continually.

I have mentioned two examples of change brought about by normal growth and by what might be called naturally occurring external influences, merely to indicate that, as time goes by, the aims, functions and methods of operation of an organization are unlikely to remain static and this is a situation which can affect a co-operative association in any field. But Aslib is working in the information field—and still mainly in the scientific and technical field—and is therefore subject to a number of abnormal influences which are expressly associated with what is generally referred to as the 'information explosion' and it is with these that I am particularly concerned in this paper.

The most interesting point about this phenomenon is that it has produced two diametrically opposing trends as far as information is concerned. On the one hand we have an intense stimulus which has led to a very rapid development in the knowledge and techniques of information science; on the other hand we have the creation of conditions whereby the available resources in money and man-power needed to support this development are likely to be reduced rather than increased unless some very positive action is taken. I will return to this in a moment.

First, let us take a look at the main characteristics of the so-called information explosion as it affects us now. To begin with we find an increasing awareness of the importance of information in the process of communication, innovation, decision making and technological advancement, not, it must be admitted, yet shared by all our masters, but moving towards that state of affairs. Secondly, an early realization that our basic understanding of the process of information transfer is totally inadequate for dealing with the problems that confront us. Thirdly, a significant influx of ideas and inspiration from outside the library and information field wherein, it is true, many well-known truths were rediscovered, but without which progress would have been very much slower. Lastly, a widespread attempt to introduce the concepts of science into information handling, not entirely successful because our problems are concerned with the social basis of science and technology and are essentially social and psychological rather than scientific.

In general the emphasis has been on research and investigation in order, first of all, to amass data which can lead to the formulation of laws or hypotheses which in turn can be used to synthesize new and more effective systems of information transfer using whatever tools modern technology can provide.

This, of course, is the scientific method, and one of the reasons why usable results have been slow to appear is that the scientific method, although a powerful tool, is not necessarily applicable to social science research of this kind. Nevertheless, progress has been made with what has proved to be an exceptionally intractable problem, the difficulties of which were greatly underestimated by the early researchers in this field. Aslib's own interest in research began as early as 1954, when the first attempt was made to formulate a research programme. For the first five years Aslib was actively engaged in persuading government and other agencies of the need for research in this field and then, in 1959, set up its own research department which has since played a major role in developments in this country. Aslib itself has played an even more significant role by ensuring that knowledge gained as a result of research and investigation is made available to the ordinary practitioner through courses, conferences, symposia and publications and through the work of the advisory and consultancy services.

Apart from stimulating research activity, the more general awareness of the importance of information services has led to an increase in the number of information units coming into existence at both local and national level, with a corresponding increase in the numbers of specialized staff required, and here again Aslib has made an important contribution, through its training courses, to meeting this demand, and, through its information and library services, to stimulating the development of these units and encouraging them in their early stages.

On this side of the picture, then, we have a rapid expansion and development, fostered by greater awareness, on the part of government and society, than ever before of the importance of information at all levels, an awareness which Aslib itself has played no small part in bringing about.

Now let us look at the other side of the picture. The top curve in Fig. 1 (see p. 464) shows the growth in world population but could equally well represent the growth pattern of most non-scientific entities such as national incomes or world literature generally. The bottom curve shows the volume of scientific and technical information measured in number of articles written or number of journals in existence, but can also represent growth in scientific man-power or expenditure on research and development. The thing to note is that they are both exponential and that the first has a doubling period of something between thirty and fifty years, the second one of between ten and fifteen years, and that this has always been so.

It is clear that the activity represented by the lower curve is, as time goes on, taking an ever-increasing proportion of the resources represented by the upper curve, a state of affairs which obviously cannot continue. Our present difficulties are caused not by the exponential growth itself—which is part of the natural order of things—but by the fact that we are approaching the point on the lower curve at which instability begins to occur as the restriction on free growth begins to be felt. In this case the restriction is of two kinds: shortage of man-power and shortage of money. Advanced countries such as the USA and UK appear to be spending between 2½ and 3 per cent of their gross national product on civil research and development, research alone accounting for about one-tenth of this, or ¼ per cent. It has been suggested[1] that the upper limit of spending on scientific research in an advanced country might be about 1 per cent of the GNP which, at the current rate of growth, will be reached in fifteen to twenty years' time. As this time approaches, violent instabilities will occur as the various activities represented by technical research and development—and information is one of these—begin to compete for the available man-power and financial support, and this process has already begun. In some sectors money and people are still forthcoming at the old rate—in others the tap is already being turned off.

For the first time we are being forced into making choices, and we do not know how to do this, because we have no agreed set of criteria to use in determining the relative merits of a particular choice. And, of course, on a world scale, the choices we need to make are not purely scientific or technological ones. For example, technologically there is no point in doubling expenditure on cancer research unless, at the same time, we spend perhaps ten times as much on research into food resources. Otherwise we are merely increasing a population which we cannot feed. But saving lives of people dying of cancer is an immediate problem whereas inadequate food resources is a remote one, at least in the Western world, and we are swayed by humanitarian considerations. On the other hand we are not sufficiently swayed, apparently, to obtain the money for cancer research by cutting down our expenditure on high energy physics which appears to have little practical value: perhaps because it holds out a faint hope of uncovering one of the major secrets of the universe and thereby, possibly, giving us a weapon with which to tackle other and more down-to-earth problems.

We do not, at present, have an answer to this problem of choice, and although a good deal of work is going on to try to find some answers it seems likely that they will not appear in time to avoid a period of extreme instability as attempts are made to adjust to the inevitable constriction by seeking empirical solutions.

Should we go on doing research at all? As one eminent American scientist has said, 'We need new knowledge like we need a hole in the head'. And it seems that we have not yet learned to make full use of what we do know. In this country development and innovation have lagged a long way behind pure research and only recently has an attempt been made to redress the balance. But here again limited resources do not permit expansion on all fronts. If more money is spent on product development, manufacture and marketing, less is available for research and there is some evidence that the pendulum may be swinging too far in the other direction (Fig. 2). Research budgets are being slashed—not only here but in the USA too—and because so many information units are tied to research departments, they too, are cut back or disappear altogether in massive reorganizations which, in theory at least, have the objective of trying to make more efficient use of available resources.

I have not been able to obtain reliable figures for the total expenditure on information in the UK but, assuming that Aslib's own expenditure is typical of the growth pattern, it can be seen that this is roughly the same as that for expenditure on scientific and technical research (Fig. 3). The upper curve shows the GNP for the UK and there is a striking similarity between this figure and Fig. 1. The lower curve, incidentally, shows the contribution to total income which is derived from membership subscriptions. It can be seen that over a long period the proportion of income derived from membership has been remarkably constant at about 40 per cent of the total and only in the last three years do the curves begin to diverge from this ratio, a clear indication that financial support from the membership is not keeping pace with income from government and other sources.

On balance it seems likely that limitations of scientific and technical man-power will set the boundaries to growth rather than lack of funds, except perhaps in some highly expensive areas such as high energy physics, where the annual cost per research scientist is in the region of £30,000 and rising.

Fig. 4 shows the growth in scientific and technical man-power in the UK and the USSR since 1955. The doubling period in the UK is about fifteen years and typical of European science which has existed for a longer period historically. That in the USSR is much shorter,[3] being about six to seven years. In America the doubling period falls between the two, being about ten to eleven years. Clearly this is a process which cannot continue for more than a few decades. At the present growth rates, if every university in the USSR were to concentrate entirely on the production of, say, physicists, there would still be a man-power shortage in Russian physics within the next eighty years.

There is one point I would like to emphasize at this stage. It is possible to carry extrapolation to the point of absurdity but we would be very unwise to refuse to take these curves seriously on that account. We are dealing with exponential quantities which are therefore highly insensitive to minor variations or error. Even a world war introduces no more than a slight wiggle in these curves. There is no doubt that the process which they represent is real and that saturation must occur sooner or later. What we are now concerned with is the problems which are going to arise during the intervening period and what, if anything, we can do about them, either individually or co-operatively.

As the volume of knowledge increases the scientist has sought refuge in increasing specialization, with each researcher working within a smaller portion of the research front. Cross-fertilization decreases to the point where the various sciences and technologies become increasingly divorced from each other. Increasing fragmentation leads to attempts to re-establish unification by moving to higher levels of abstraction, a process which has been the province of the theoretician in most subject fields. His role in compacting the literature and in developing illuminating correlations from a mass of data has been remarkably successful, especially in basic subjects such as mathematics and physics; so much so that we are now using the basic principles of the process to develop new institutions which can fulfil this role in the more complex world of big science. Known variously as 'information analysis centres' or 'specialized data centres', their job is to collect, analyse and interpret information for the 'bench' scientists and technologists whom they serve. In a world in which scientific and technical man-power becomes ever scarcer, each individual scientist must be given the means to operate more effectively and it is not enough to produce sophisticated information systems which enable him to obtain a mass of information more quickly and more comprehensively, unless that information has been predigested and compacted in such a way that the time required to absorb it is reduced by at least an order of magnitude.

In our preoccupation with large-scale computerized systems we may be in some danger of falling into the familiar trap of believing that all research results—and the papers which report them—are of equal value whereas we all know that some papers are more 'equal' than others. It may well be that effort devoted to better screening systems at the publication stage and to intensive compaction at the output would be a more economic and effective solution than investment in a mass of computer hardware.

To answer this kind of question more research is needed. Not only that, but we may need to develop better techniques for carrying out this kind of research and here we may find it helpful to involve the social scientist more than we have done in the past. One of the aims of the newly formed Aslib Social Sciences Group is to undertake some examination of the part which the social sciences might play in shedding light on some of the more intractable problems of information transfer and I believe that this is an area in which Aslib could make a significant contribution.

What effect are these developments likely to have on the individual information unit? For a number of reasons I would suggest that the days of the purely technical information unit as we know it may be numbered. As far as big science is concerned, the researcher is likely to have two main requirements. Firstly, the need for compacted and evaluated information which will be supplied by the information analysis centres, employing scientists and technologists who have already exhibited high performance in the research field itself, and whose judgment will be accepted by the working scientists and engineers. Secondly, a collection of documents—a library or system of libraries—in which he can consult individual documents in order to clothe the bare bones of the information he has obtained from the evaluation centres. I would suspect that these libraries would be staffed by professional librarians whose earlier education had given them a broad background in science and technology but who had not specialized in any particular branch of science. One glance at the man-power curves should convince us of the futility of trying to attract scientists and engineers from a stockpile which is destined to fall further and further below the national requirement for research and development. I cannot see how we can possibly hope to attract first-class people in such a situation and if our libraries are to be efficient they need the best that we can provide. The only solution that I can see is to educate the people we need right from the beginning to do the job required of them, rather than trying to create a race of hybrids as we are at present.

If we move now to industry, where the accent is more on development than research, again I find it difficult to see much of a future for the purely technical information service. As the emphasis is placed more and more on development, manufacture and marketing, in all of which information plays an essential role, I would expect to see the rise of multi-purpose units covering all these activities and including in their repertoire some evaluation function. Some of these exist already and it is noticeable that, in general, these services find much less difficulty in persuading management of their value to the organization than does the technical information service securely tied to the research department. This may be one of the reasons why industry seems to have fallen behind government and society generally in its awareness or appreciation of the importance of information. One of the tasks which I hope the new Aslib Technical Committee on External Relations will undertake is a thorough examination of this problem, first, to try to determine why it exists and, second, what can be done to advance a solution.

The reluctance of industrial management to recognize the importance of effective information services is a problem which we must solve if we are going to make any headway as an industrial nation. In order to do so it may be necessary to question some of the more commonly held ideas about technological innovation. For example, it has been said many times that effective research and development can be carried out only in large companies which can afford to devote, annually, more than some minimum sum—the sum varies but is usually very large—to R&D. Yet, in a recent article[3] it was stated that about 5 per cent of the R&D effort in industry is responsible for 80 per cent of the useful innovations and that this 5 per cent is concentrated mainly in small firms. No evidence was given for this statement but one can see why it might be so. R&D in big industry has become a team effort with a consequent reduction in creativity, particularly in those fields where insight is more important than the aggregate of relevant knowledge.

Now the fact is that the provision of information services in small industry is well below the average standard of industry as a whole, so, if this statement is correct, one has a choice of two conclusions:

(1) That information plays no significant part in the innovation process.

(2) That if it does play a part, then we should concentrate our resources on providing information services aimed particularly at small industry because in this way we shall get a much better return on the money and effort invested.

The first conclusion would seem to be at variance with all the available evidence relating to the role of information in innovation. The second is one which Aslib should find no difficulty in accepting, since, for a long time, a large part of the work of the Aslib Information Department has been concerned with doing just this. What is more important is that so much more could be done in this direction if resources could be made available: the main stumbling block is, once again, the reluctance—or inability—of management to recognize the need.

This brings me to my last point in relation to individual information units. The Dainton Report may well be one of the first steps in the development of a systematic network of library and information services organized at different levels, which the local unit will be able to plug into as the need arises. This network will include national and regional libraries, local co-operative schemes, subject-based documentation and data centres providing retrospective retrieval and SDI services, information analysis units, commercial information services, of which there are nearly a hundred already, although their mortality rate is pretty high, and national and international referral centres to co-ordinate the network.

If local units are to benefit from this kind of network two fundamental requirements must be observed. The first is that the network must not be designed in such a way that it can be used *only* as an auxiliary to the local service. The total resources available are just not big enough to allow this to happen. It is essential that when the local unit uses an external service it should be able to stop doing something internally so that the total effort remains fairly constant. The failure of some commercial services may well have been due to the fact that they have not enabled the local unit to substitute their service for something it was providing itself, and the new government-supported information services may find themselves in exactly the same position when government backing is withdrawn and they have to become self-supporting. One of the very few services which has succeeded in meeting this requirement is the NLL, since it has enabled many small and medium-sized libraries to reduce their holdings of periodicals, with consequent savings in space and maintenance. This is probably true, too, of many of the local co-operative schemes.

The second essential requirement is that we should not try to design an external network which is aimed directly at the ultimate user, because I do not think it will work. In industry, at any rate, if information is to flow freely into and out of the organization it must flow through a channel of some kind and preferably a channel which is knowledgeable and experienced in the art of information transfer. This is one of the lessons which the Aslib Information Service has learned the hard way. It is too much to expect that every scientist, technologist, engineer or what have you in the country will learn to tackle the intricacies of a complex multi-dimensional information network, or learn the techniques of asking questions efficiently, or even observe the rules of the system, unless there is someone available to guide them, teach them, cajole them and threaten them. It is quite fallacious to believe that engineers, technologists and research workers delegate searching and question-asking only with extreme reluctance. In situations where they do not have internal access to a library or information service they are only too ready, when seeking information from external sources, to provide their own channels, using their secretaries, or somebody else's secretaries, or the newest recruit to the laboratory, or anyone they can lay their hands on, and since none of these people is skilled in any aspect of information transfer, wrong or incomplete answers are inevitable, and as a result their faith in the external system collapses and the system itself falls into disrepute.

The appointment by OSTI of liaison officers and, more recently, of six information officers to universities would seem to lend a good deal of support to this contention, for one of the main functions of these people is to provide a channel through which the universities can make better use of the newly developed computerized services such as MEDLARS and UKCIS as well as other external services. Certainly the experience at Aslib shows that it is possible to provide a much more effective service to an organization possessing a competent and experienced information specialist than to one which does not.

From now on a good deal of effort is likely to be devoted to designing and building the national network. The most important aspect of any multi-level system is that it shall be designed in such a way that the cost of using it is as low as possible commensurate with the maximum effectiveness at each level. This is a function both of the structure of the system and of the techniques which are available to the user for making use of the various services provided and in both these areas a great deal of work needs to be done, and it is important that the needs of the user organizations are not overlooked in the process. This could be one of the essential tasks that Aslib is called on to perform and is going to demand the maximum amount of support from all its members.

The next few years are likely to be critical and even turbulent ones for the information business. It is certain that support for research and development cannot continue to grow at the present rate and may begin to fluctuate wildly as the restrictions are applied. We urgently need a mechanism which can be used to increase the effectiveness of research and innovation by at least an order of magnitude, and I believe that a properly designed information transfer system could be one of the major constituents of such a mechanism. There is therefore a case for information science to continue to receive maximum support from government, industry and the academic world even if this means that it secures a disproportionately big slice of the national cake. This support will not be forthcoming unless we can show that there is substance in our belief in the effectiveness of information services and to do this we shall have to summon all the resources at our disposal.

The mechanism to accomplish this already exists. You have at your disposal an Association which is one of the strongest and most coherently organized bodies in the library and information world and which still has very great potential for well-directed co-operative activity. Between us I believe we have the ability and will to tackle these problems, provided that the necessary support is forthcoming.

REFERENCES

1 ADAMS, J.B. *Science,* vol. 148, 1965. p. 1560-4.
2 FREEMAN, C., *and* YOUNG, A. *The research and development effort in Western Europe, North America and the Soviet Union.* Paris, OECD, 1965.
3 EILOART, T. Fanning the flame of innovation. *New Scientist* vol. 43, 11 September 1969. p. 536-8.

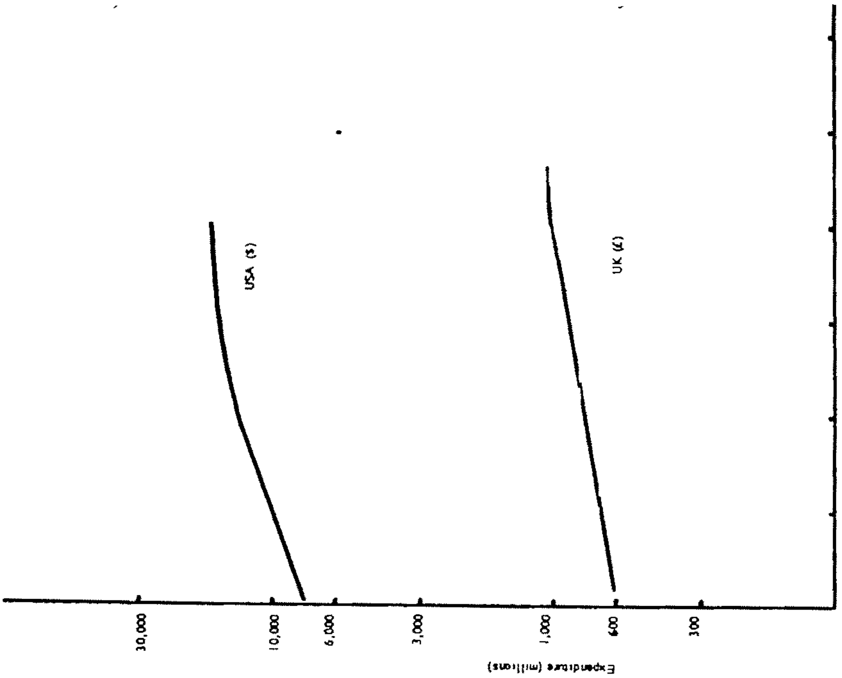

Fig 2 Cost of R & D in UK and USA

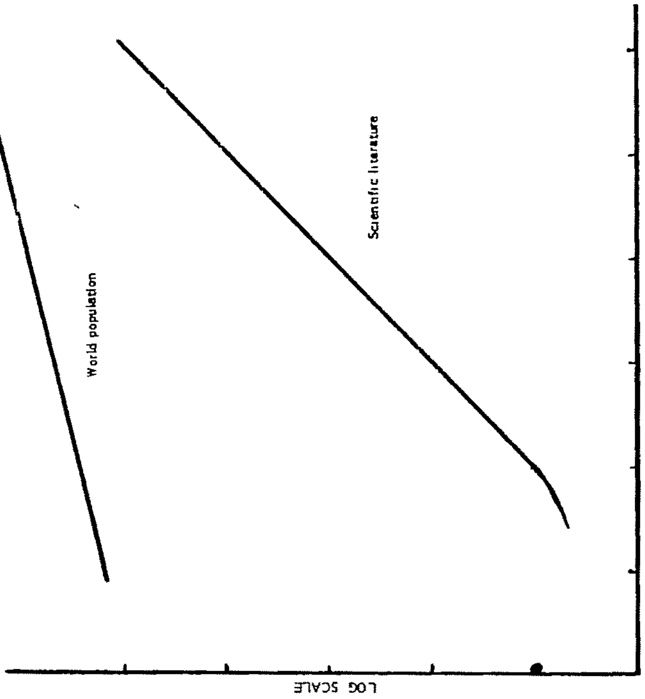

Fig 1 Growth of scientific activity compared with growth of world population.

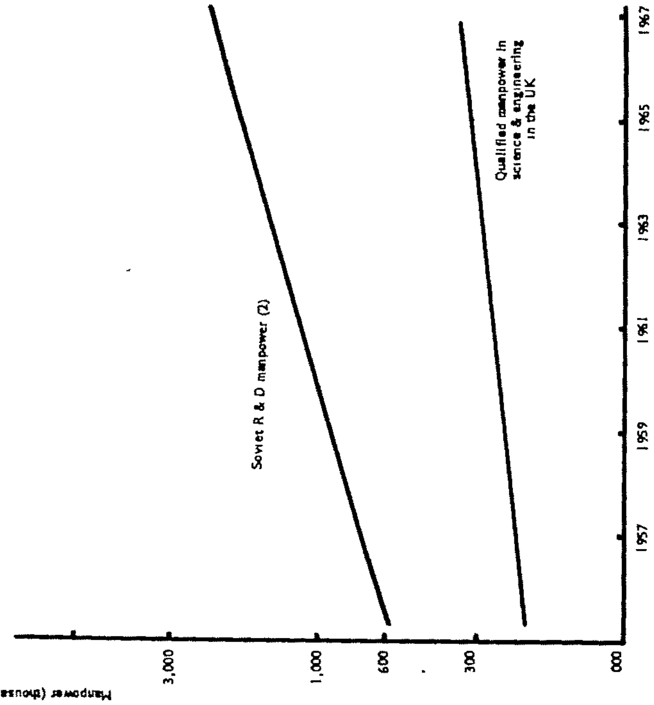

Fig. 4 Growth in scientific and technical manpower

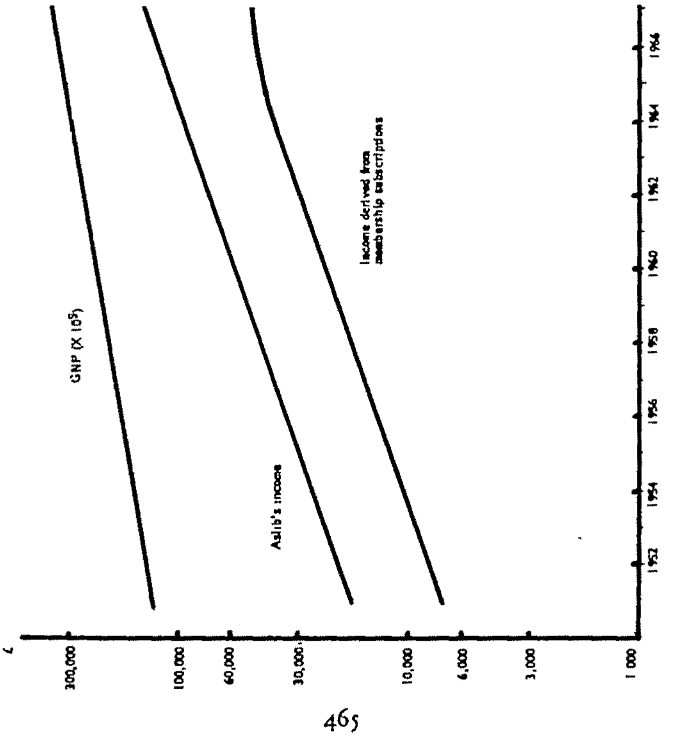

Fig. 3 Growth of Aslib's income and expenditure

DISCUSSION

MR K. J. RIDER (Birmingham Public Libraries) said, first, the saturation point of literature is unlikely to be reached for some time because it must be a function of available man-power; second, he considered that technical information units would be increasingly required, viz. NLL; and third, there was an increasing need for special information units, and Aslib should attempt to spotlight the areas where these would be most useful. MR ANTHONY agreed with the second and third points, and in answer to the first point said that it was in the period between the onset of saturation and the saturation point itself that the major difficulties are likely to occur.

DR D. J. CAMPBELL (independent) said he could not understand Mr Anthony's point about the profession of information science being unlikely to be able to draw on a dwindling pool of scientists. He thought that many scientists, for some reason or another, preferred to stay within science, but not be a practising scientist. MR ANTHONY replied by quoting some DES figures on man-power output from universities to show that, for example, less mathematics teachers were going into school education, therefore fewer mathematicians would be trained, therefore fewer teachers of mathematics would be produced, thus leading to the kind of oscillation in the manpower curve which he had mentioned.

MR F. L. A HANDOVSKY (Esso Chemical SA) raised two points: one, Aslib is primarily concerned with scientific and technical information, and two, many scientists are moving out of the scientific area and he noted that many scientists are moving into areas like market research and marketing, and that they needed information support. MR ANTHONY agreed with this. He recognized that strong information needs exist in many areas outside science and technology, but that the majority of Aslib members were still science/technology based. However, Aslib was already expanding its activities into the area of marketing and commercial information and it would be no problem to absorb multi-purpose units.

Letters to the Editor

Dear Sir,

CITATION NOISE

Professor de Solla Price's letter[1] about the need for well-chosen citations (references) raises the question of the effect of badly chosen citations on systems which use citations as a means of locating articles.

It has been alleged that searches using the Science Citation Index (SCI) are inherently 'noisy' [2, 3]—the cause, at least in part, being due (for instance) to 'padded' reference sections in articles, a practice deplored by de Solla Price. It has even been suggested that such practices are the norm for authors, as also are plagiarism, unjustifiable self-citations, and so forth[4].

Noise in SCI searches is of two kinds:

'Documentation noise' (articles which cite a chosen starting article, and which are adjudged to be of interest from the Source Index description but which when read are found to be of no interest) is usually rare.

'Citation noise' is an article which cites a chosen starting article, but which is adjudged from the document representation to be of no interest.

Critics of the SCI have confused citation noise which is largely under the control of the user with citation noise which is not under his control.

A properly chosen starting article for an SCI search is one which circumscribes the nuance and aspects of the subject of interest. If the user selects such an article in the belief that the authors of current articles of interest may cite it, he will also usually find that the noise level is low. As an exception to this there are some articles which it is almost mandatory to cite when writing about a certain subject. For some searches many of the 'answers' to such a 'broad' question may constitute noise.

As a rather obvious example, consider a user who is interested in an aspect of Holography—the phenomenon of holographic temporal recall.

User A chooses a classic article about Holography as a search starting point—GABOR, 1948[5]. He is led forward to twenty-eight 1968 citing articles in the SCI of that year. One or two of them have some bearing on the subject, but the noise level is high.

User B chooses an article specifically about the subject—LONGUET HIGGINS, 1968[6]. He is led to nine citing articles in the 1968 SCI, all of which he would probably adjudge to be of varying degrees of interest.

Space does not permit of a discussion of a special case—the user who knows nothing whatsoever about the subject, and must therefore acquire knowledge of at least one appropriate starting article. There are some interesting techniques, using the SCI and Permuterm Subject Index, to break this 'chicken and egg' situation.

Assuming that the user does make a good choice of starting article, and also takes the elementary precaution of not choosing either a very recent article which cannot yet possibly have been cited, or an article whose subject content is obsolete by reason of its age, then some noise will still appear in the search.

This noise occurs by reason of 'passing references', 'padded' reference sections, unjustifiable self-citations, and author and processing errors. It is quite difficult to make a true statement about the obtrusiveness of this noise.

In a system as large as the SCI it is not too difficult to pick out examples of it. This has been done in review articles, giving the impression that noise is always likely to be embarrassing.

To estimate its effect in an average type of search on an average subject in typical circumstances it would be necessary to make a sufficiently large sample of searches for various subjects and circumstances so that a true statement could be made. It would also be necessary to consider the usual noise trade-offs, according to whether a high recall or high precision search is required. (These options may be exercised in SCI searches as in many other systems.)

The work involved in carrying out the necessary number of searches would be prohibitively great.

The writer has carried out a number of searches in a variety of subjects and circumstances, usually without subject expertise, and whilst it is not claimed that this represents anything like a representative sample, the time spent on noise elimination has averaged about 15 per cent of total search time; this indicates that excessive noise is not a feature of SCI searches.

Noise is expressed here in terms of wasted time, because of the importance of that commodity; the 15 per cent figure should not be confused with percentages of unwanted articles. An unwanted article can usually be ignored in a much shorter time than the time taken to consider details and list a wanted article.

This finding in no way diminishes the need for authors to take account of Professor Price's plea. No doubt special cases exist where some form of 'author generated noise' could be objectionably obtrusive in an SCI search.

Readers interested in wider applications of bibliographic control may care to refer to reference 7.

Yours faithfully,

A. E. CAWKELL

Institute for Scientific Information,
132 High Street,
Uxbridge,
Middlesex.
15th September 1969.

REFERENCES

1 DE SOLLA PRICE, D. J. Citation practice. *Aslib Proceedings*, 21, viii, 1969, p. 328.
2 LIPETZ, B-A. Improvement of the selectivity of citation indexes through inclusion of citation relationship indicators. *American Documentation*, 16, 1965, p. 81–90.
3 TAGLIACOZZO, R. Citations and citation indexes; a review. *Methods of Information in Medicine*, 6, iii, 1967, p. 136–42.
4 MAY, K. O., *and* JANKE, N. C. Abuses of citation indexing. *Science*, 156, 1967, p. 890.
5 GABOR, D. A new microscopic principle. *Nature*, 161, 1948, p. 777.
6 LONGUET HIGGINS, H. C. Holographic model of temporal recall. *Nature*, 217, 1968, p. 104.
7 GARFIELD, E. World brain or Memex. Mechanical and intellectual requirements for universal bibliographical control. In: *The foundation of access to knowledge*. Syracuse University Press, Box 8, University Station, Syracuse, New York, 13210, USA, 1968, p. 169–96.

Dear Sir,

CITATION PRACTICE AND STANDARDIZATION

An hour before reading Dr de Solla Price's plea for a sane citation policy[1] I was scanning the Communications to the Editor in *Chemistry and Industry* and was struck by an unusual paper which had no citations at all[2]. This described an insecticide of a class first discovered by ICI in 1965. The paper contained several facets which probably could have been documented by citations. My interpretation of this phenomenon was that here were two authors who wished to claim priority for their discovery in a 'quicky' publication (doubtless having previously filed for patent protection) but perhaps were not too keen on their information being too readily retrievable, though the title, '*Pirimicarb* (PP 062): a new selective carbamate insecticide', does contain informative keywords.

There may well be a number of scientists who do not wish to disseminate their new information too widely so that they can pursue their researches in peace, but who nevertheless wish to register a priority in their field. They should be permitted to shelter behind the barrier of no citations or even less than fully informative titles and should not be forced to comply with an editorial policy contrary to their best interests. No citations at all are, I believe, preferable to three or four citations which an author, sophisticated in the art of citation indexing, includes deliberately to produce 'false drops'.

With the above proviso I would endorse Dr Price's pleas for more standardization of citations and add to it a plea for an internationally standardized editorial approach to other tags with which the information content of a paper can be associated and which can be easily extracted by persons with little subject knowledge. These include the author's address, names of biological species and nomenclature and formulae of chemical compounds studied. Chemical formulae are frequently expressible in several forms, and whilst the chemist subconsciously recognizes as equivalent the several representations of, say, the phenyl radical, e.g. various hexagonal symbols, C_6H_5, Ph, Bz, some indexers and all computers (unless specially programmed) will not recognize these equivalences, with a resultant scattering of information at the secondary level. In short, what Dr Price and I are suggesting is the establishment and use by editors of a type of international 'thesaurus' which would include not only keywords for titles but which would similarly standardize citations; to this I I would add standardization of biological and chemical nomenclature, etc. Citation standardization is but the tip of the iceberg.

Yours sincerely,

ROBERT T. BOTTLE
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308 Carnegie Library,
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Syracuse, New York 13210.
24th September 1969.

REFERENCES

1 DE SOLLA PRICE, D. J. *Aslib Proceedings*, 21, viii, 1969, p. 328.
2 BARANYOVITS, F. L. C., *and* GHOSH, R. *Chem. & Ind.*, 1968, p. 1018.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

Items are available in the Aslib Library and may be borrowed unless marked to indicate reference copies.*

User Studies

LANDAU, HERBERT B.
Methodology of a technical information use study.
Special Libraries, vol.60, no.6, July–August 1969, p.340–6.
A methodology for conducting a study of the needs of a technological information user.

JAIN, A. K.
Sampling and data collection methods for a book-use study.
Library Quarterly, vol.39, no.3, July 1969, p.245–52.

Library Systems

GREAT BRITAIN. Department of Education and Science
Principal documentary evidence submitted to the National Libraries Committee. London, HMSO, 1969.
2 vols.

AVICENNE, PAUL
Bibliographical services throughout the world 1960–1964. Paris, Unesco, 1969.
228 p., tables. (Unesco bibliographical handbooks 11.)

CANADA. Dominion Bureau of Statistics. Education Division. *Adult Education Section*
Survey of libraries, Part II: academic libraries. Ottawa, the Queen's Printer, 1969.
50 p., tables.

BUDINGTON, WILLIAM S.
Interrelations among special libraries.
Library Quarterly, vol.39, no.1, January 1969, p.64–77.
The objectives and requirements of the library network for co-operation to exist. Examples of co-operative schemes in various countries.

STEVENS, NORMAN D.
The continuing conflict.
Journal of Education for Librarianship, vol.9, no.4, Spring 1969, p.308–12.
The conflict between the university library and graduate school of library science in the same institution.

Administration and Management

WORK simplification in Danish public libraries: the report of the Work Simplification Committee of the Danish Library Association, by Henning Gimbel . . . 1964. Abridged version translated by Rudolf C. Ellsworth. Chicago, American Library Association, Library Technology Program, 1969.
xiii, 256 p., diagrs. (LTP publication no.15.)

UNITED STATES OF AMERICA STANDARDS INSTITUTE
USA standard for library statistics. Sponsor: Council of National Library Associations. [New York], the Institute, 1969.
31 p. (USAS Z 39.7–1968.)

MACLEAN, HILLAS
Administrative implications of adopting the Anglo-American Cataloguing Rules.
New Zealand Libraries, vol.32, no.3, June 1969, p.81–92.

JORDAN, ROBERT, *and* BLUMENFIELD, CATHERINE
The Jordan plastic book box: a new concept in library storage and circulation.
Library Resources and Technical Services, vol.12, no.4, Fall 1968, p.435–41.

BIXLER, PAUL
The academic library world—not so round.
College and Research Libraries, vol.30, no.4, July 1969, p.362–4.
Analysis shows the American and European bias in the holdings of academic libraries.

DAVINSON, D. E.
The periodicals collection: its purpose and uses in libraries. London, Andre Deutsch, 1969. SBN 233 959629.
212 p., illus.

SMITH, RICHARD DANIEL
Paper impermanence as a consequence of pH and storage conditions.
Library Quarterly, vol.39, no.2, April 1969, p.153–95.

MAXTED, I. F.
Borrowing from Sorby Hall Library, University of Sheffield, 1967–68.
Research in Librarianship, vol.2, no.11, May 1969, p.127–40.
Survey conducted by two students at Sheffield University Postgraduate School of Librarianship and Information Science, June and July 1968.

Printing and Publishing

UNITED STATES OF AMERICA STANDARDS INSTITUTE
USA standard for compiling book publishing statistics. Sponsor: Council of National Library Associations. [New York], the Institute, 1969.
8 p., table. (USAS Z 39.8–1968.)

KHERTS, M. M.
O predstavitel 'nosti teksta zadonnoi dliny.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.6, 1969, p.25–8.
On the representativeness of a text of a given length.

VADEN, WILLIAM M.
An analysis of world-wide contributions to *Nuclear Science Abstracts,* Volume 22 (1968). [Oak Ridge, Tennessee], USAEC Division of Technical Information Extension, [1969].
94 p., tables. (TID–25004.)

WHITLEY, RICHARD D.
Communication nets in science: status and citation patterns in animal physiology.
Sociological Review, vol.17, no.2, July 1969, p.219–33.

BARKER, RONALD E.
International copyright: present position and problems. Part ii.
British Book News, September 1969, p.661–7.

UNITED STATES. Library of Congress. *Copyright Office*
International copyright protection. Washington, DC, the Library, 1969.
7 p. (Circular 38.)

Reprography

*BRUIN, J. H. I. DE, *and* SOBEY, C.
Microfiche services in libraries; 2nd rev. ed., including the addresses of members of the Microfiche Foundation Working Group. Delft, Microfiche Foundation, 1969.
29 p. (Publications on the Microfiche no.11.)

CHAMBERS, HARRY T.
The management of small-offset print departments: a guide to setting up and running internal and trade offset printing. London, Business Books, 1969.
191 p., illus.

Subject Organization

ANDERSON, BERYL L.
Special libraries in Canada: a statistical analysis and commentary. Ottawa, Canadian Library Association, 1969.
13 [20] l., tables. (Occasional Paper no.76.)

TEHNZEN, JOBST
Der Ingenieur und das Schrifttum: 10 Jahre Technische Informationsbibliothek, (TIB).
Industrie-Anzeiger, no.48, 10 June 1969, p.41–4.
Describes the origin and function of the Technical Information Library at Hannover University.

DESMOND, R. G. C.
The library of the Royal Botanic Gardens, Kew.
Bulletin of the Circle of State Librarians, vol.17, no.3, September 1969, p.29–31.

SAWYER, F. C.
The library of the British Museum (Natural History).
Bulletin of the Circle of State Librarians, vol.17, no.3, September 1969, p.35–8.

FISCHER, GWENDA
The law library at the University of Adelaide, 1959–68.
Australian Library Journal, vol.18, no.6, July 1969, p.213–18.

LITTLETON, ISAAC T.
The literature of agricultural economics: its bibliographic organization and use.
Library Quarterly, vol.39, no.2, April 1969, p.140–52.

ELLIOT, C. K.
Abstracting services in psychology: a comparison of *Psychological Abstracts* and *Bulletin Signalétique.*
Library Association Record, vol.71, no.9, September 1969, p.279–80.

*BOTTLE, R. T., *ed.*
The use of chemical literature; 2nd ed. London, Butterworths, 1969.
294 p.

*BRUNN, ALICE LEFLER
How to find out in pharmacy: a guide to sources of pharmaceutical information. Oxford, Pergamon, 1969.
130 p.

SHEEHY, EUGENE P.
Selected reference books of 1968–69.
College and Research Libraries, vol.30, no.4, July 1969, p.371–80.
Selection of American, British, and European publications.

VAUGHAN, J. E., *and* ARGLES, MICHAEL
British Government publications concerning education: an introductory guide. Liverpool, The University of Liverpool, School of Education, 1969.
34 p.

FOSTER, DONALD L.
A check list of U.S. government publications in the arts. (University of Illinois Graduate School of Library Science Occasional Papers, no.96.) 1969.
48 p.

Mechanization

CARROLL, DEWEY E., *ed.*
Proceedings of the 1968 clinic on library applications of data processing. Urbana, Ill., University of Illinois Graduate School of Library Science, 1969.
235 p.

KILGOUR, FREDERICK G.
The economic goal of library automation.
College and Research Libraries, vol.30, no.4, July 1969, p.307–11.
Increased productivity as the necessary goal to minimize costs of library automation.

TOMAS, L.
Primenenie kart a dvukhryadnoi kraevoi perforatsiei dlya analiza parametrov referativno-bibliograficheskikh izdanii.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.6, 1969, p.20–3.
The application of edge-notched cards to the analysis of abstracting and bibliographic publications.

BLODGETT, JOHN H., *and* SCHULTZ, CLAIRE K.
Herman Hollerith: data processing pioneer.
American Documentation, vol.20, no.3. July 1969, p.221–6.

Classification and Cataloguing

FOSKETT, A. C.
The subject approach to information. London, Bingley, 1969. SBN 85157 077 1
310 p.

OLDING, R. K.
Information indication—the role of conventional theory.
New Zealand Libraries, vol.32, no.3, June 1969, p.95–102.
Discusses different methods of shelf classification and subject cataloguing.

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th International edition. UDC 3/308 Social Sciences, Sociology, Sociography. London, the Institution, 1969.
18 p. (BS 1000 [3/308] 1969. FID Publication no.179.)

BRITISH STANDARDS INSTITUTION
Universal Decimal Classification. English full edition. 4th International edition. UDC 636/639 Animal breeding, animal produce, hunting, fishing. London, the Institution, 1969.
37 p. (BS 1000 [636/639] 1969. FID Publication no.179.)

NEELAMEGHAN, A.
Design of scheme for classification.
Herald of Library Science, vol.8, no.2, April 1969, p.96–110.
Series of articles on the scheme devised at the Documentation Research and Training Centre, Bangalore.

LUBETZKY, SEYMOUR, *and* HAYES, R. M.
Bibliographic dimensions in information control.
American Documentation, vol.20, no.3, July 1969, p.247–52.
The relevance of bibliographic cataloguing.

JACOB, MARY ELLEN
Book catalogs: their function in integrated library systems.
Special Libraries, vol.60, no.6, July–August 1969, p.332–9.
Discusses problems associated with establishing an integrated library system similar to that at Sandia Corporation's Livermore Laboratory, with its automated cataloguing and listing.

DOWNING, J. C., *and* SHARP, N. F., *eds.*
Seminar on the Anglo-American Cataloguing Rules (1967). Proceedings of the Seminar organized by the Cataloguing and Indexing Group of the Library Association, at the University of Nottingham, 22nd–25th March 1968. London, The Library Association, 1969. SBN 85365 271 6.
104 p.
Papers given by J. A. Tait, W. Dent, T. D. Wilson, J. Friedman, R. O. Linden, G. E. Hamilton, A. G. Curwen and P. J. Quigg.

COLLOQUIUM ON THE ANGLO-AMERICAN CATALOGUING RULES, Toronto, 31st March–1st April 1967
The code and the cataloguer: proceedings of the colloquium... held at the School of Library Science, University of Toronto.... Toronto, University of Toronto Press, 1969.
122 p.

DOLBY, J. L., *and others*
The cost of maintaining and updating library card catalogs, by J. L. Dolby, V. J. Forsyth and H. L. Resnikoff. Final report. [Washington, DC], United States Office of Education, Bureau of Research, 1969.
Var. pag.

HONEY, C. R.
A study of coding and data co-ordination for the construction industry: architectural design. Watford, Ministry of Public Building and Works, Building Research Station, March 1969.
29 p. (BRS Current Paper 4/69.)

FOSTER, A. G., *and others*
A study of coding and data co-ordination for the construction industry: mechanical engineering services. Watford, Ministry of Public Building and Works, Building Research Station, March 1969.
81 p. (BRS Current Paper 6/69.)

FARRAR, C. H., *and* MALTHOUSE, R. F. W.
A study of coding and data co-ordination for the construction industry: quantity surveying, etc. Watford, Ministry of Public Building and Works, Building Research Station, March 1969.
39 p. (BRS Current Paper 8/69.)

BRITTEN, JOHN R.
A study of coding and data co-ordination for the construction industry: contractors'

management. Watford, Ministry of Public Building and Works, Building Research Station, March 1969.
46 p. (BRS Current Paper 9/69.)

BRITISH STANDARDS INSTITUTION
Specification for alphabetical arrangement and filing order of numerals and symbols. London, the Institution, 1969.
13 p. (BS 1749:1969.)

Language and Indexing

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
Guide for the preparation of classified vocabularies (example of method). [Geneva], the Organization, 1969.
15 p. (ISO Recommendation, R919.)

LEWIS, ELIZABETH M.
A graphic catalog card index.
American Documentation, vol.20, no.3, July 1969, p.238–46.
Pilot model at United States Military Academy Library, West Point.

HUANG, THEODORE S.
Efficacy of citation indexing in reference retrieval.
Library Resources and Technical Services, vol.12, no.4, Fall 1968, p.415–34.

COOPER, WILLIAM S.
Is inter-indexer consistency a hobgoblin?
American Documentation, vol.20, no.3, July 1969, p.268–78.
Determination of a relationship between indexer consistency and retrieval success.

ZUNDE, PRANAS, *and* DEXTER, MARGARET E.
Indexing consistency and quality.
American Documentation, vol.20, no.3, July 1969, p.259–67.
Method for measuring indexing consistency.

RUGGLES, RICHARD
Report on indexing of articles in collective volumes.
American Economic Review, vol.58, no.2, May 1968, p.708–10.
A new proposal for the index of *Economic Journal.*

KOCH, KARL-HEINZ
Maschinelle Herstellung des Alphabetischen Sachverzeichnisses der DK-Handausgabe.
DK-Mitteilungen, vol.14, no.3, May 1969, p.11–13.
Describes the method used for automatic production of the alphabetical subject index to the abridged German UDC.

PETRARCA, ANTHONY E., *and* LAY, MICHAEL
The double-KWIC co-ordinate index: a new approach for preparation of high-quality printed indexes by automatic indexing techniques. Columbus, Ohio, Ohio State University, Computer and Information Science Research Center, 1969.
Var. pag. (Technical Report 69–7.)

IVANOVA, N. S.
K voprosu ob avtomaticheskom postroenii tezaurusa.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 2, no.6, 1969, p.17–20.
On the automatic compilation of a thesaurus.

*UNITED STATES. Department of Health, Education and Welfare. *Public Health Service*
Medical and health related sciences thesaurus; [2nd ed. Washington, DC, the Service], 1969.
460 p. (Public Health Service Publication no.1031.)

*BACKER, STANLEY, *ed.*
Thesaurus of textile terms covering fibrous materials and processes; 2nd ed. Cambridge, Mass., M.I.T. Press, 1969.
448 p.

WILLIAMS, B. J. S.
Thesaurus of microform terms. Hatfield, Herts., National Reprographic Centre for documentation, DTL Services, 1969. SBN 85267 0079.
38 p.

*WELDING INSTITUTE
A thesaurus for welding and allied processes. [Cambridge], the Institute, 1969.
82 p.

KYZ'MIN, YU G.
Voprosy terminologii v praktike i teorii perevoda nauchno-tekhnicheskoi literatury.
Nauchno-Tekhnicheskaya Informatsiya, Seriya 1, no.6, 1969, p.11–19.
Problems of terminology in the practice and theory of the translation of scientific and technical literature.

Information Processing and Systems

POOLE, J. B.
Information services for the Commons; a computer experiment.
Parliamentary Affairs, vol.22, no.2, Spring 1969, p.161–9.

HINDSON, RICHARD
The Colvilles computerisation project.
SLA News, no.92, July/August 1969, p.329–33.
The Information Service of the Colvilles Division of the British Steel Corporation.

BAKER, NORMAN R.
Optimal user search sequences and implications for information systems operation.
American Documentation, vol.20, no.3, July 1969, p.203–12.

*KATZ, WILLIAM A.
Introduction to reference work. New York, McGraw-Hill, 1969.

2 vols. (McGraw-Hill Series in Library Education.)
Vol.I: Basic information sources. Vol.II: Reference Services.

Communication and Knowledge

UNITED STATES. National Academy of Sciences–National Academy of Engineering. *Committee on Scientific and Technical Information*
Scientific and technical communication: a pressing national problem and recommendations for its solution, a report. . . . Washington, DC, National Academy of Sciences, 1969.
322 p.

Professional Activity

MILLS, THEODORA T. B.
Foreign language in the curriculum.
Journal of Education for Librarianship, vol.9, no.1, Summer 1969, p.52–9.
The importance of including languages in the course for a master's degree in librarianship.

REES, ALAN M.
The impact of computer technology on library education.
Unesco Bulletin for Libraries, vol.23, no.1, January-February 1969, p.25–9.
Investigates the objectives of libraries and the responsibilities of librarians, with due regard to social changes in communication made possible by scientific and technological developments.

SABOR, JOSEFA E.
Methods of teaching librarianship, with an introductory study by Ricardo Nassif. Paris, Unesco, 1969.
143 p., bibliog. (Unesco manuals for libraries, 16.)

PIERSON, ROBERT M.
The teaching of reference librarianship.
Journal of Education for Librarianship, vol 9, no.4, Spring 1969, p.351–61.
A comment on the articles in the Summer 1969 issue under "Teaching bibliography and reference—Four divergent views" with suggestions for the teaching of reference work—a theoretical approach.

TEACHING bibliography and reference—four divergent views.
Journal of Education for Librarianship, vol.9, no.1, Summer 1968, p.18–44.
Contents: Bibliography and the seminar by Raymund F. Wood, p.18–24; One road through the wood by Laurel Grotzinger, p.24–34; Reality in reference teaching by Norma J Shosid, p.35–41; An introduction to reference by Sylvia Ziskind, p.41–44.

WHITWORTH, T. A.
An outsider looks at research in librarianship.
Research in Librarianship, vol.2, no.11, May 1969, p.121–6.
The scope for a scientific approach to library research.

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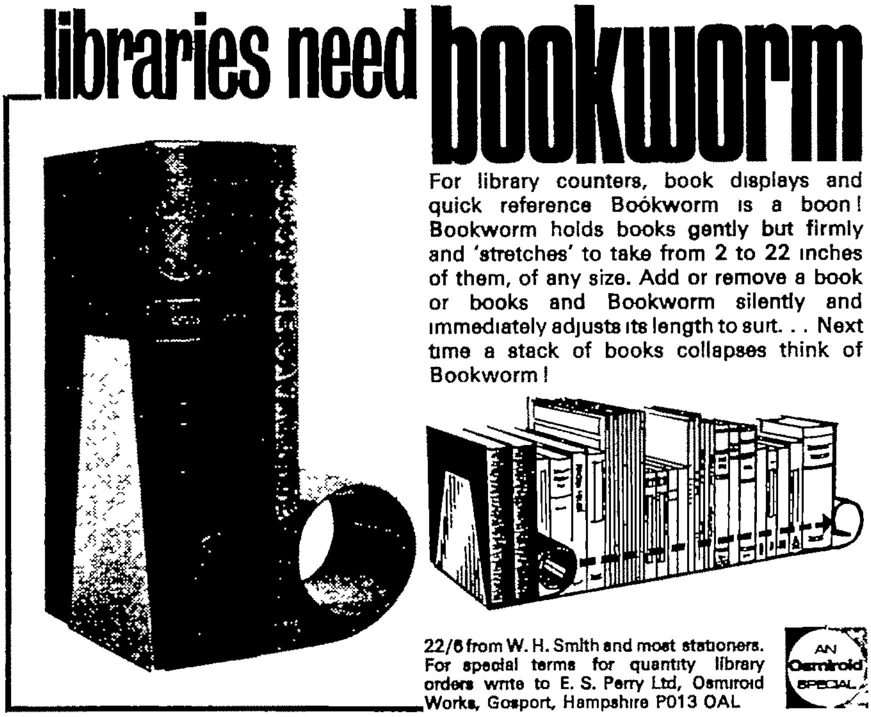

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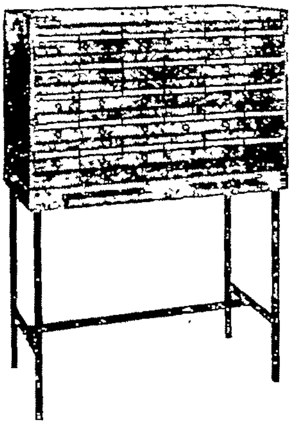

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ASLIB PROCEEDINGS

incorporating Aslib Information

Volume 21 **December 1969** **Number 12**

ASLIB CALENDAR 1970

January

TUE.13.	Aslib Midlands Branch/Institute of Information Scientists. Joint meeting: Commercial Information. Speaker: G. P. Henderson. Arden Hotel, Birmingham. 6.15 p.m.
WED.14.	Aslib Audio-Visual Group. Annual General Meeting. Aslib. 5.30 for 6 p.m.
FRI.16.	Aslib Technical Translation Group. Annual General Meeting and Lecture. Teaching languages to business men. Speaker: H. J. Eichinger (Leeds Language Laboratories). Aslib. 3 p.m.
WED.21.	Evening Meeting at Aslib. Reprographic services in libraries. Speaker: T. J. Morgan (Greater London Council). 5 for 5.30 p.m.
WED.28.	Aslib Social Sciences Group. Annual General Meeting. Aslib. 5.30 for 6 p.m.

February

WED.4.	Aslib Engineering Group. One-Day Conference. Newcastle.
TUE.17.	Aslib Midlands Branch Meeting. Future Roles of Aslib and the L.A. Speaker: D. T. Richnell. Loughborough Library School. 6.15 p.m.
WED.25.	Evening Meeting at Aslib. Facsimile transmission. Speaker: J. J. Hall (Bristol Building and Design Centre). 5 for 5.30 p.m.
FRI.27 – SUN.1.	Aslib Transport Group. Week-end Conference. Sunningdale Park College, Ascot.

March

FRI.20.	Scottish Branch Annual General Meeting and Conference. Stirling.

April

FRI.10 – SUN.12.	Aslib Aeronautical Group Conference. Cranfield.
THU.23 – SAT.25.	Aslib Joint Northern Midland Branch Conference. Derwentwater Hotel, Portinscale, Keswick.

Aslib/CIRIA Joint Conference

'It pays to be informed' was the theme of a joint Aslib/CIRIA conference held in Leamington Spa, 28th to 30th October 1969. The conference was arranged as a missionary exercise for the construction industry, an industry in which there are rather special problems in the use and dissemination of information.

Some fifty-five delegates, from consultants' and architects' offices, and contractors, heard eight papers on topics covering: functions and staffing of an information/library unit, types of organization and their dissemination problems (this dealt with the specialized problems of scattered sites and staff in the construction field) and costs and benefits of information services.

Three syndicates were formed to discuss the groups of papers at length and to report the results of delegates' findings to the conference. These syndicates proved to be of considerable value and arising out of their discussions the conference made two definite recommendations for action, as follows:

1. It is recommended that Aslib and CIRIA be asked to undertake a survey to determine the present extent and costs of individual information services in the construction field and to assess the costs of units in relation to numbers of technical and professional staff. It is considered that such information would provide useful guidance for organizations who wish to set up or extend their information services. It is also considered that these two bodies should be asked to prepare a document on the reasons for having information units in organizations concerned with civil engineering and construction in the broadest sense.
2. It was recommended that a unified statement should be prepared by the major information sources in the construction industry, in which these sources state what services they provide and within what limitations, and that such a statement be given wide publicity within the industry.

Sir William Glanville was Conference Chairman and speakers were: Dr H. H. Neville, Mrs K Bourton, M. A. Pyle, Miss R. I. Doidge, R. G. Groeger, R. S. G. Nicol, C. D. Overton, and G. C. A. Tanner. The Proceedings will be published by CIRIA.

Course on teaching methods

Aslib has arranged a four-day course on teaching methods for librarians and information officers, to be held at Garnett College, Roehampton, from 15th to 18th September 1970. Garnett College is a college of education for teachers in further education and it has agreed to provide both teachers and accommodation.

The course will cover principles of preparation and planning of lessons and courses, principles and methods of presentation, including lecture and informal techniques (tutorials, discussions, assessment of students' work, etc.). Aslib has agreed to cover organizational and lecturing costs and students will be asked to pay for accommodation and meals only, the probable charge being about £8 for residents and £4 for non-residents.

The number of students will be limited to twenty and the course will not be held unless at least fifteen students are enrolled. Those interested in attending should contact the Education Officer as soon as possible.

Combined advisory centre

Members will be pleased to know that Sir John Wolfenden, President of Aslib, was invited to open the new combined advisory centre at the Engineering and Building Centre, Broad Street, Birmingham, on 5th December 1969.

As announced in *Aslib Proceedings* of October 1969 the Aslib Midlands Regional Liaison Office is an integral part of the combined centre, which includes among other organizations the Construction Industry Research and Information Association, the Timber Research and Development Association, the Cement and Concrete Association, and the Ready-Mixed Concrete Association.

Senior officers of Aslib, particularly of the Midlands Branch, were invited to the opening ceremony and buffet luncheon.

Controlled-circulation journals

A number of members have referred during recent months to difficulties encountered in getting their names on to the mailing lists for those controlled-circulation journals which they wish to receive regularly. These are journals which depend primarily or exclusively on advertisement revenue and which are distributed free of charge to specified categories of readers considered as prime targets for the advertising material carried. Many publishers of these journals do not include librarians or information officers among their scheduled categories, possibly because they are unaware of the nature and extent of selective dissemination which they undertake, especially in the industrial field at which the journals are mostly aimed.

Aslib and the Library Association have discussed this problem together and a substantial amount of information has been collected. Whilst it is recognized that a problem exists for some members of both associations, it is not considered that it is at present one of major proportions. In some cases the technical quality of material published in the journals has undoubtedly deteriorated with their change of status, and librarians will no doubt make their own judgements as to those which they wish to continue receiving. In the case of journals which continue to publish valuable material it is suggested that librarians negotiate directly with the publisher concerned. Whilst it is true that some publishers have refused to supply free copies when requested, there is also a good deal of evidence of publishers being willing to add a librarian's name to their lists or, alternatively, to address copies to an executive of acceptable status care of the company library, if the request is made in reasonable terms.

Meanwhile, the two associations will continue to watch the situation in the interests of their members and would be glad to receive details of any point-blank refusals that may be encountered.

The Committee on National Libraries

The Director of Aslib was a member of a group of persons representing the Parliamentary and Scientific Committee who met Dr F. S. Dainton, Chairman of the Committee on National Libraries, on 13th November, to discuss with him the considerations which had led to certain of the recommendations contained in the Committee's Report. This discussion was part of a continuing programme of meetings between representatives of the Parliamentary and Scientific Committee and Minister and others concerned with the national provision of specialized library and information services.

Aslib and the under-developed world

On 13th June 1969 the Director, Mr Leslie Wilson, represented Aslib at a meeting held at the Ministry of Overseas Development under the auspices of the Education Advisory Committee of the United Kingdom National Commission for Unesco to discuss those parts of the Unesco Programme relevant to the interests of non-governmental organizations.

Speaking at Section IV of the meeting, which was concerned with science teaching and technical education in developing countries, Mr Wilson said that scientific and technical information services offered to the developing countries one of the most effective means of access to the scientific and technological expertise of the rest of the world. He pointed out that unless students are kept in touch with developments in science communication then in a few years' time, when more sophisticated systems are in operation, these students will be left far behind the more advanced parts of their world. In this connection he mentioned the encouraging results of a feasibility study carried out by Aslib on the provision of intensive training courses in scientific information in Nigeria and Ghana (see *Aslib Proceedings*, July 1969, p. 256). The report of the meeting which is, of course, much wider in scope than scientific information alone is available on request from Aslib Library.

Aslib International Relations Committee

In order to bring into Aslib's international work a wider range of interests than those represented in the Aslib membership alone, the Council has agreed that up to eight non-profit organizations of national standing with a known interest in scientific information should be invited to nominate a representative to serve on the Aslib International Relations Committee.

Up to the present the Royal Society, the Chemical Society, the Institution of Electrical Engineers, the Institute of Physics and the Physical Society, the British Standards Institution, the National Computing Centre and the Library Association have accepted an invitation to nominate a representative. It is hoped that this expanded Committee will also serve as a forum for the pooling and exchange of information about the library and information activities of those other international scientific organizations with which these new members of the Aslib Committee are actively associated.

Developing countries

Among recent visitors to Aslib were Mrs Levai, Chairman of the FID Committee on Developing Countries, and Mr Orosz, both of Budapest. They discussed with the Director of Aslib British participation in the work of the Committee, and in particular the organization of a symposium to be held in Budapest in 1970 to discuss ways in which the industrially advanced countries might assist developing countries in the field of scientific and technical information.

Information Processing and the Computer

A series of eight lectures is to be presented by the Ealing School of Librarianship, from 7 p.m. to 9 p.m. on successive Wednesdays from 18th January to 11th March 1970 at Ealing Technical College.

Designed for practising librarians in all kinds of library, the course is intended first to introduce the characteristics of computers and their operation, and finally to lead to an appreciation of the uses to which they can be put in libraries and information departments. The stress will be on information processing. Time will be given for questions and discussion. Towards the end of the course a live demonstration will be provided, through the college link with a data processing centre.

The lecturer will be Dr T. V. Coe, of ICI Ltd, Paints Division, Slough, a librarian with considerable experience in the use of the IBM-360/50 computer for the storage and retrieval of scientific and technical information.

The fee is £8. For further information please write to Mr J. Burkett, MA, FLA, Principal Lecturer, Ealing Technical College, St Mary's Road, Ealing, W5.

IFIP World Conference on Computer Education

The Technical Committee for Education and the Administrative Data Processing Group of IFIP (International Federation for Information Processing) are organizing a World Conference on Computer Education to be held in Amsterdam from 24th to 28th August 1970. The conference language will be English.

Three plenary sessions are planned, with two invited speakers for each session, to lecture on: current developments in computer education; educational technology; and evaluation of education and examinations.

Demonstrations are being prepared by educational institutions, and there will also be an exhibition of relevant equipment and publications. Those wishing to contribute either to the demonstrations or to the exhibition should contact the Conference Secretariat, IFIP Computer Education 1970, 6 Stadhouderskade, Amsterdam 13, Netherlands.

A course of scientific Japanese

OSTI has offered a grant of £9,954 over two years to Professor G. Bownas of the Centre of Japanese Studies, University of Sheffield, for the development and evaluation of an intensive course aimed at teaching scientists a reading knowledge of scientific Japanese.

Recent surveys show that Japanese scientific literature is becoming increasingly important to research workers, while it appears, on the other hand, that the proportion published in English is decreasing. The proposed course, it is hoped, will enable scientists to read Japanese texts with the aid of a dictionary and will be based on a word-frequency count. Use will also be made of audio-visual aids during instruction.

Computer-based Information Services

OSTI has recently offered a further grant of up to £40,500 for one year to cover continuing research and development on the exploitation of the magnetic tapes produced by the Institution of Electrical Engineers (IEE) for the publication of INSPEC (Information Service in Physics, Electrotechnology and Control). This work will be carried out in co-operation with the United Kingdom Chemical Information Service.

It will include work on the content and manipulation of the machine file, a study of hardware and software requirements for on-line editing and retrieval, evaluation of the printed subject indexes and an investigation of natural-language selective dissemination of information (SDI).

As a result of interest shown from abroad, INSPEC is supplying tapes for experimental purposes to bodies in the USA, Canada and to major European countries. It is also co-operating with the OECD, Unesco, and the International Council of Scientific Unions in the co-ordination of international discussions.

ISI grant for Science Citation Index System

In view of the increasing demand for scientific and technical information from institutions whose library budgets are severely restricted, the Institute for Scientific Information has announced that it is prepared to offer grants to support certain categories of educational establishments, hospitals, and medical schools, in their purchase of the Science Citation Index System. ISI will match any subscriber's outlay with the equivalent sum by grant, and this will apply to past, present and future issues of the index.

The Science Citation Index System comprises the Citation, Source and Permuterm sections. In 1969 it is describing some 330,000 items of scientific and technological interest by indexing 2,200 of the world's prime journals in science and technology.

Grant applications in the UK and Northern Europe should be made to Mr A. E. Cawkell at 132 High Street, Uxbridge, Middlesex; and in France and Southern Europe to Mr Peter Aborn, 49 Avenue Paul Doumer, Paris 16, France.

ACCESS

The 1969 edition of *ACCESS*, a new reference tool designed to help users locate specific source documents containing information of chemical interest, is now available from Chemical Abstracts Service. This supersedes and replaces the *Chemical Abstracts List of Periodicals*, published by CAS since 1908.

Compiled in co-operation with 397 libraries in twenty-eight nations, *ACCESS* provides identification of source publications cited in the scientific literature by abbreviated title. It indicates which of the participating libraries maintain files of those cited. Some 21,000 publications are covered, including those abstracted by *Chemical Abstracts* since 1907, by *Chemisches Zentralblatt* since 1830, and those cited by *Beilstein's Handbuch der organischen Chemie* prior to 1907.

Information in this edition will be kept up to date through quarterly supplements, and both the first edition and the supplements will be available in computer-readable form.

ACCESS is priced at $100. An annual subscription to the quarterly supplement is $75. Orders or inquiries should be sent to Subscription Fulfillment, Chemical Abstracts Service, Ohio State University, Columbus, Ohio, 43210.

Information/Library Patent Abstracts and Graphics

Publication began recently (with the July–August 1969 issue) of *C/I/L Patent Abstracts*, a bimonthly journal consisting of the official abstracts and graphics describing newly granted US patents relative to the computer, information and library sciences. Each issue contains approximately 200 patents selected from those appearing in the US Patent Office's *Official Gazette* during the previous two-month period. Abstracts are arranged sequentially according to patent number, and patent titles have been permuted and indexed by keywords (KWIC index).

The annual subscription is $35, which should be sent to the publisher, Science Associates/International Inc., 23 East 26th Street, New York, NY 10010.

Desalination Abstracts

The Center of Scientific and Technological Information, Israel, is making generally available *Desalination Abstracts*, which was produced in the past as an internal publication. It is published quarterly and now contains over 500 abstracts per year. These are classified by UDC, and there are indexes by subject, author and patent numbers. The annual subscription is $20 (single copies $6).

The first two volumes (1966–67) are to be published as one cumulative volume, containing about 800 abstracts, at the end of this year at a cost of $40. It is available from the Center at 84 Hachashmonaim Street, Tel-Aviv, Israel.

International Copyright meeting

The International Copyright Joint Study Group held its first session in Washington from 29th September to 3rd October 1969. This group was established by the Intergovernmental Copyright Committee (governing the Universal Copyright Convention) and the Berne Permanent Committee (governing the Berne Copyright Convention) to examine the entire situation of international relations in the field of copyright.

Twenty-six countries are represented in the study group and three topics were studied at the first session: (1) the establishment of an international mechanism to permit developing countries a greater degree of access to copyrighted works while respecting the rights of authors; (2) the needs of the developing and developed countries in the international copyright field and the effect of the régime of international copyright relations in the satisfaction of those needs; and (3) the problems arising from the existence of two copyright conventions of world-wide scope and possible methods of providing links between them.

International Meeting of Cataloguing Experts

In August 1969 an International Meeting of Cataloguing Experts was convened in Copenhagen as a result of a resolution passed by the International Federation of Library Associations in August 1968. It received financial support from the Council on Library Resources.

Thirty-eight participants from thirty-two countries attended, to review cataloguing developments since the International Conference on Cataloguing Principles held in 1961 (the Report of the ICCP 1961 is available from Clive Bingley Ltd at 63*s*). The prospects of cataloguing advances through standardization and mechanization were examined; and in this connection national bibliographies, the Shared Cataloging Program, and the production of cataloguing data in machine-readable form were considered. A detailed report of the IMCE is in preparation and IFLA hope to publish it shortly.

New Head of ICI Central Technical Information Unit

Dr F. W. Matthews, of Canadian Industries Ltd, the ICI subsidiary company, has been seconded to the ICI Head Office as head of the company's Central Technical Information Unit. His appointment began on 1st November and he has replaced Dr W. E. Batten, who is now director of the United Kingdom Chemical Information Service.

Dr Matthews was head of the information services at CIL and is a former director of the Chemical Institute of Canada. He played a part in the research leading to 'Crossbow', a system for the computerized storage and retrieval of chemical formulae, now in operation at ICI. He is also on the editorial board of *Information Science in Canada,* and is currently chairman of the Data Commission of the International Union of Crystallography.

Film and the Historian

A conference on 'Film and the Historian' was held at University College London on 22nd to 23rd September to bring together historians, film archivists and those engaged in film and television production. The conference was organized under a Social Science Research Council grant to the Slade Film Department.

Among the speakers were Sir Arthur Elton, who gave a paper on 'Facets of Industrial History on Film', and Ernest Lindgren of the National Film Archive on 'The Selection of Films for Preservation'. A number of films using archive material were shown; and Dr Paul Smith of King's College led a discussion on the evaluation of film as historical evidence.

Project Planning Centre

The University of Bradford has recently set up a Project Planning Centre to focus attention on project planning and evaluation methods, particularly in developing countries. The centre is arranging a series of courses, starting with a course on Rural Projects from 6th July to 25th September 1970, and followed in 1971 by two similar courses on Industrial Projects and Infrastructure, and the Social Services. Further details can be obtained from The Director, Project Planning Centre, University of Bradford, Bradford 7, Yorkshire.

H. K. Elliott, 1918-1969

We regret to announce the sudden death of Mr Hugh K. Elliott, managing director of H. K. Elliott Limited, London W8.

Mr Elliott had been an active member of Aslib for some years and his expert knowledge of the foreign language problems and also of the antique book trade made useful contributions to discussions on those subjects. When he established his own firm of booksellers he counted several Aslib members among his early clients and his friendly and efficient service will be missed by many.

BRIEF REVIEWS

AVICENNE, PAUL. Bibliographical services throughout the world, 1960–1964. Paris, Unesco, 1969. 234 p. (Unesco bibliographical handbooks 11.) 30*s.*

This, the second of the cumulative reports on national services, covers eighty-three countries and is very welcome in spite of being rather out of date by now. (The first report covered the period 1950–1959 and was prepared by R. L. Collison.) Compared with that report it contains more information on the newly independent or developing countries, as in the meantime they have made progress in strengthening their services.

For each country the arrangement is in nine distinct sections (national, and special, bibliography, periodical indexes, legal deposit, training, archives, etc.) concordant with the questionnaire which is regularly completed by the national correspondents. Material taken from the bi-monthly Unesco publication *Bibliography, documentation, terminology* provided complementary entries. The statistics show that there has been some progress in the sixties. Thus the count at the end of 1964 gave, for national bibliographies, fifty-two current and twenty-six retrospective, thirty-five bibliographies of periodicals, forty-five countries providing training in bibliography and sixty-five countries with legal deposit. A useful Synoptic Table shows where each country stands in the provision of the eighteen bibliographical and other services that are reported on.

In one respect Unesco has not come up to the best practice in bibliographical publications, which by their nature are inevitably beset with delays. The rapporteur, Paul Avicenne, signed his introduction in October 1965. The French edition of the report appeared in 1967. We have had to wait another two years therefore for the English translation to appear.

BOTTLE, R. T., *ed.* The use of chemical literature. 2nd ed. London, Butterworths, 1969. 294 p. 65*s.*

This manual, which first appeared in 1962, has by now become a well-established tool for the documentation of chemistry. The editor, with the help of twelve contributors, has almost completely rewritten nearly all the chapters, and added two new chapters with the titles 'Polymer science' and 'Some less conventional sources of information'. In addition to the standard reference material of chemistry (abstracts, translations, handbooks, patents, trade publications, etc.) there are detailed descriptions of the literature of inorganic, physical, nuclear and organic chemistry as well as a chapter on the historical texts. Thus it continues to be a useful textbook for formal instruction in the use of the literature and a guide for the working chemist in the daily problems of locating information.

BRITISH STANDARDS INSTITUTION. Specification for the presentation of conference proceedings. London, 1969. 12 p. (BS 4446 : 1969.) 6*s*. (SBN 580 05438 1.)

It is notorious that conference proceedings tend to present bibliographical problems to abstracting and indexing services, to librarians and bibliographers, which must sometimes delay or even prevent their being drawn to the attention of potential users. *Ad hoc* conferences or symposia that form no part of a series of meetings or publications offer the worst difficulties, which may be aggravated by the not infrequent fact that they may be prepared for the printer by inexperienced editors who have been pressed into service for the occasion by the convenors of the meeting, and who may be unaware of the disservice to their discipline that inattention to the presentation of bibliographical detail can do.

A simple ten-page guide to editorial good manners is now available as a standard, which has been drawn up by the Documentation Standards Committee with one eye on the *Anglo-American Catalogue Rules of the Library Association* (1967). The pamphlet deals with editorial layout, form and bibliographical presentation on the cover, on the title leaves, in the text (including papers and reported discussion) and index. Like BS 2509, on the form and presentation of bibliographical information in periodicals of reference value, BS 4446 should be in the hands of all conference editors and publishers, who should appreciate that adherence to its provisions—none of which appears in the least onerous or indeed out of the way—can only enhance the value of their work.

DIRECTORY of special libraries. 2nd edition, completely revised and enlarged through direct enquiry during 1968. Tokyo, Senmon Toshokan Kyogikai, 1969. 394 p. $15.

This is the second edition of the former *Directory of research libraries,* 1956. 1,360 Japanese organizations providing information services are listed in classified order with an index by organization. Its aim is to promote national and international co-operation; therefore English translations are given of proper names and other basic details such as publications and subject fields. Data were collected by questionnaire and were correct as at December 1967.

LIBRARY ASSOCIATION. Reference, Special and Information Section: in association with Birmingham Public Libraries. British Government Publications: an Index to Chairmen and Authors, 1941–1966. Edited by A. Mary Morgan. London, 1969. 195 p. 75*s*. (SBN 85365 121 3.)

This publication, which is based on an index compiled by the periodicals section of the Birmingham Reference Library over the past twenty-five years, is a useful guide to British government reports. The titles of reports are listed under the name of the chairman of the committee responsible for producing the report. Brief publication details are included such as date, Command Paper or House of Commons paper number, or the name of the department issuing the report. There is no subject index.

MORRILL, CHESTER, JR. Computers and data processing. A guide to information sources. Detroit, Gale Research Co., 1969. 275 p. $11.50. (Management Information Guide No. 15.)

This is a guide to the literature, associations and institutions connected with data processing, with special reference to managerial needs. The field covered is wide; it includes basic reference texts as well as specialist publications. There is a brief guide to indexing and abstracting sources, technical and commercial directories, and to manufacturers, publishers, periodicals and employment agencies connected with data processing. The book has author, title and subject indexes. Although designed principally for the needs of American management, this guide, in view of its wide coverage, should be of general interest and use.

VERNIMB, C. Indexing rules for the Euratom nuclear documentation system (ENDS). Luxembourg, Euratom, August 1969. 40 p. (EUR 4500e.) 60 Belgian francs.

This report is the third part and in effect complements the first two parts of the Euratom Thesaurus (covering respectively the indexing terms and the terminology charts). It provides the guidelines for assigning terms working only from an abstract, and describes the types of terms, the hierarchical and semantic relations between them, general purpose keywords and names of isotopes, alloys, etc. Indexing rules for particular subject fields, like chemical compounds, and instructions for filling in the indexing sheets are given. With an appendix giving twelve examples of indexing, this report is an essential tool for anyone using the Euratom Thesaurus and for all students of thesaurus building and use.

CO-OPERATION IN CATALOGUING

C. D. BATTY
College of Librarianship Wales

Paper presented at the 43rd Aslib Annual Conference, University of Warwick, Coventry, 21st–24th September 1969

As the theme of this conference implies, librarianship itself is inherently an act of co-operation. We are communications specialists bridging the gap between information and ignorance, by organizing information so that we can use it, and by organizing ignorance so that we can find information to match it. A part of this effort is the exploitation of the total resource of recorded knowledge, and the catalogue is one of the most valuable tools that we use in this exploitation, provided that, as with all tools, we keep it in good order, and know how and when to use it. In recent years and even in recent weeks, much has happened both directly and indirectly to promote co-operation in the field of cataloguing; sometimes these developments have occurred because cataloguers have recognized a need and they sometimes form part of a larger movement for professional co-operation. In this paper I should like to concentrate on an important aspect of the whole problem of co-operation in cataloguing, and that is the nature of the relationship between the problem itself and its practical solution. I intend to offer a summary of the way in which the problem has developed and the way in which different kinds of solutions have been proposed, since perhaps one of the most important things we can do as librarians to ensure effective co-operation in the future is to examine the very peculiar nature of the situation that faces us. We may then confirm the developments that are now taking place, or we may begin to wonder if some of them are not likely to suffer the same fate that has overtaken attempts at co-operation in the past.

In spite of an unfortunate reputation for parochialism and idiosyncratic practice in individual libraries, librarians have always exhibited a general urge towards co-operation. For well over one hundred years our profession has seen many attempts to join libraries in a bibliographic unity, in particular in the field of what we might call co-operative cataloguing and what the nineteenth century called universal bibliography: the control and announcement in an integrated way of the world's literature. As far back as the 1840s Charles Coffin Jewett urged the cause of universal bibliography and even attempted a single-handed effort, and his proposal was based on three conditions that have become almost classic for co-operative ventures.

Jewett described two necessary conditions that must be met before an effective co-operative venture could be attempted. The first was improved copyright legislation; at that time the law on copyright in the United States was notoriously weak and largely ignored. The second was agreement on cataloguing rules, and in this Jewett echoed a general professional demand also expressed very forcefully by Panizzi in the British Museum; this demand was itself another aspect in the move towards co-operation: in this case the adoption of uniform practice in different libraries. There was a third unstated condition: the availability of a technology capable of handling the physical quantity of material and reproducing it. It was unstated because for Jewett it must have been, as it has been since, a *sine qua non* of large-scale co-operation. Jewett's efforts failed and the reasons for his failure only confirm his theories: copyright legislation was so weak that the supply of material was unreliable, the administrative aspects of co-operation between libraries were not easy to handle, and, flexible though Jewett's store of stereotypes may have seemed at the time, they remained a clumsy method of handling data. But at least Jewett provoked active discussion, notably on copyright legislation and on the provision of union catalogues, and his suggestions for a code of generally applicable cataloguing rules were taken up by Panizzi, who owed a great deal to Jewett's ideas, as did Cutter later in the century. It is remarkable that in this first and now quite remote period of attempts at co-operation the problem should have been seen as clearly as it was and the aspirations should have been as far-sighted and as realistic as they turned out to be.

Towards the end of this period, in 1877 at the first International Conference on Librarianship, a Central Bibliographic Bureau was proposed by Henry Stevens. Its independent nature differed from Jewett's assumptions of reliance on existing large libraries, but otherwise it follows very closely the suggestions of Jewett for the provision of authoritative entries on cards or slips and indeed it is difficult to imagine a better description of the British National Bibliography than these words written in 1877 (apart from the unfortunate last phrase) '. . . [a bureau] where librarians . . . may buy descriptive slips or card titles of books . . . Such a bureau . . . might be made self-supporting or even remunerative, like the Post Office'. Stevens' proposals were typical of an age that saw the first conference of the American Library Association; the publication of the Dewey Decimal Classification; Cutter's *Rules for a dictionary catalog*; the US Bureau of Education report on public libraries of which those rules were a part; Dewey's report on co-operative cataloguing and his recommendations for a co-operative system; and the recommendations of Rogers of the Philadelphia Mercantile Library for national catalogues. The emergence of the dictionary catalogue and the controversy about dictionary and classified catalogues had led to a fundamental examination of cataloguing theory and practice. Laws on copyright and legal deposit had been improved. Probably most importantly, technical processes had improved almost out of recognition; where Jewett had to rely on the physical manipulation of stereotypes, Stevens could propose photo-bibliography. But what Stevens was proposing and what Jewett had spent much of his life trying to organize looked increasingly doubtful of achievement.

Unfortunately by 1880 the rapidly increasing production of material made the problem much more complex. In the second half of the nineteenth century book production doubled and periodical production quadrupled, and it was clear that this was a rising figure. In 1879 the *Library Journal* attempted a cataloguing service for current titles that would have gone at least some way to answer Henry Stevens' call. But within a year the experiment had failed because it satisfied neither the librarians for whom it was neither comprehensive nor fast enough, nor the publishers who had to supply advanced copies of the material to be catalogued. In the 1840s Jewett's analysis and proposals had been sufficient for the problems that he then faced, but now the problem itself had changed, at the very moment when the technology and general context which made a major contribution to Jewett's failure had improved sufficiently to achieve what he had set out to do.

The next twenty-five or thirty years were years of experiment and lasted until just before the first world war. A new assessment of the problem that faced librarians in the control of world literature led to two separate lines of development which took bibliographers and cataloguers in different directions. The awareness of the need for complete current coverage forced subject bibliographers to turn their attention away from books alone and realize the importance of other sources, and realize also the importance of the access to the material rather than its description. They began to concern themselves with works like Poole's *Index to periodical literature* of 1882 and the *Concilium Bibliographicum*.

The traditional cataloguer concentrated on a different kind of detail altogether, concerned almost entirely with the world of books. Publications like the *ALA Catalog* of 1893 and the services of the Library Bureau (founded partly by Dewey for the supply of library equipment but which in 1893 began to issue printed catalogue cards) show that librarians now limited their aspirations in the field of co-operative cataloguing to either select lists or lists of current titles. Probably the most intensive and noticeable effort in this period was the work on an internationally agreed code of cataloguing rules, published in 1908 as the Anglo-American Code. This was the culmination of three-quarters of a century of cataloguing theory but, like many major efforts of this kind, it came about only because of formative discussion in the past and was therefore the final solution to the problems that had been so long discussed; it looked backwards and not forwards. In many ways it was an elegant and economical solution to the problems defined first by Jewett and Panizzi and further explored by Cutter. Its rules concerning personal authors concentrated on what version of the name to use, while the rules concerning corporate authors concentrated on identifying the kind of corporate body involved rather than on how to write its name down. What had been problems to Jewett and Panizzi were problems no longer and problems that had never existed in their day or had seemed slight were now becoming major problems. Cause or effect or manifestation, the 1908 code of cataloguing rules suggests that much of cataloguing thinking at that time lay in the past rather than in the future. Curiously enough the achievements in the field of subject bibliography and documentation towards international co-operation show a clear recognition of the conditions defined by Jewett: the need for an agreed language of control (in this case the Universal Decimal Classification); a certain source of material (in this case co-operation through an international agency—the newly founded Institut International de Bibliographie); and improved technical processes.

These separate developments, culminating on the one hand with the agreed code of cataloguing rules looked for by Jewett, and on the other hand in the establishment of an international organization already at work on practical schemes for the international control of literature, might well have been expected to promote effective co-operation. But the split was too great, and cataloguers continued to look inwards and to put their own house in order; the publication of the AA code of 1908, instead of acting as a spur to further and wider action on an international front, led only to further self-examination and revision of the cataloguing rules themselves. It was left to another profession entirely to achieve results.

A third period, this time of the realization of practical limitations, extended to the middle of this century. In the middle of the 1920s the IIB failed to collaborate with the League of Nations and the United States withdrew financial support from this international project, and there began the commercially produced national current booklists like Whitakers and the Russian *Letopis' Zhurnalnykh Statei*. This seemed the end of universal bibliography as it had been envisaged in the nineteenth century, and it was confirmed within a few years by the depression, the need for stringent economy and growing international political suspicion. But the need for self-examination in the interests of economy revealed yet again the advantages of centralization and co-operation, and in America and in Britain the first really practical steps were taken by the profession itself to achieve at least national coverage: the establishment in America of the National Union Catalogue, and in this country of the National Central Library and the first of the Regional Library Bureaux, paradoxically facilitated the need to provide 'made' work for the workless. The self-examination also revealed how much time was wasted in routine copying and duplication of effort among libraries; it served ultimately to reduce the gap between the cataloguer and the bibliographer, between those insistent on full entry and those who saw abbreviated entry sufficient for their purposes.

In the foundation of the British National Bibliography in 1950 we find the nearest expression in real terms to the aspirations and plans of men like Jewett and Stevens. It satisfied the conditions laid down by Jewett and unchanged since then: a basis of legal deposit, agreed standards in cataloguing, and the use of up-to-date technical resources. Basically, however, the BNB never was and fundamentally is not now a co-operative cataloguing venture; it began as a national bibliography and in its plans for the future it is likely to expand its activities far beyond the range of normal cataloguing in the traditional sense. It was not for some years after the initiation of BNB that the printed card service was started and although it is likely to continue in the future the development of a machine-readable record does not necessarily have the production of catalogue cards as its prime objective. BNB's philosophy is at once a return to the nineteenth century association of co-operative cataloguing schemes with the idea of universal bibliography and also a reflection of the modern ideas consequent upon automation: of abandoning separate and self-contained routines. Perhaps this and the continual search for more and more efficient and flexible technical capability has ensured the survival of BNB beyond a point at which it might have failed by providing a solution to a particular and past analysis of the problem.

To some extent this kind of failure had already occurred with the cataloguing-in-source experiment in the Library of Congress. The Library of Congress has sold printed cards for over half a century and for much of that time the printed cards have represented entries not only in the catalogues of the Library of Congress but also in the National Union Catalogue, and they may therefore be held to be part of a co-operative cataloguing system that satisfies the conditions laid down by Jewett. But it remains the general dissemination of a single library's catalogue and in the past has proved to be in some respects both idiosyncratic and slow. In 1958 the Library of Congress tried to put a specimen catalogue entry on the back of the title page of the book itself. This was an engaging idea and similar to some ideas proposed in the nineteenth century but it was really only a refurbishing of the existing printed card service with the same design and methods. The changes involved a reliance on the publishers and on external lines of communication, and both publisher and the post office, directly or indirectly, demonstrated the unworkability of the scheme. It is interesting to speculate on the effect of the printed card service: would cataloguing-in-source have had a better chance of success if the service had not existed to affect the design of the experiment, or even the judgement of those who had to pronounce it so complete a failure? Yet again, a solution valid for the problem as it had existed in the past (but when the technical facilities were not available) proved to be the wrong solution, or a solution to the wrong problem, when it was finally put into effect.

Belonging to this fourth age of achievement is the computer-based system that handles machine-readable bibliographic records, beginning historically with computerized union catalogues and leading ultimately to the provision of machine-readable bibliographic data in the MARC system. Computers were seen for some time and still are seen by some as the latest means to the provision of conventional catalogues, but offering a better service through the use of national libraries or bibliographic agencies and the enormously powerful technical capability of the machine. Even at this level of thinking it seems that for once the problem might be analysed and a solution might be suggested simultaneously with the provision of a technology powerful enough to meet its demands. But it very soon became apparent that much more was possible with this new technology, and co-operative cataloguing moved out of its age of achievement into an age of automation in which it can no longer be considered by itself but must be considered as a part of a larger system involving all the provision, manipulation, and use of bibliographic data within the library, and indeed outside it, wherever that bibliographic data may occur.

I should like now to begin to form a question on the basis of the historical outline that I have tried to give you. It is clear that co-operation in cataloguing never occurred satisfactorily in period after period because in each case analysis of the problem suggested an adequate and satisfactory solution that could not be matched by technical capability at the time, either in the provision of source material or in the organization and reproduction of the bibliographic data. And by the time that either of these conditions could be satisfied the problem itself had changed so that the solution for which the technological capabilities were designed was no longer valid and a fresh analysis had become necessary. Now apparently we find ourselves with a technology powerful enough to answer the needs of almost any theoretical solution; we have just passed through a period of reassessment, certainly of cataloguing and to some extent of the library as a total system; and we are in the process of reassessing the library as an element in the social structure, trying to define its role and possible effectiveness. For once we seem to have brought the two sides of the solution closer together. But have we really achieved a match of theoretical and practical solution, or are we deluding ourselves and will the old pattern of leapfrogging continue unless we take particular account of this phenomenon?

The introduction of computers into libraries for anything but the purely administrative use that exists in business and industry began in the area of cataloguing and indexing, and even now this is felt to be one of the most profitable areas for computer deployment. In the United States, county and regional systems realized that the computer could offer easier up-dating, sorting and reproducing techniques for the supply of catalogues and particularly of union catalogues. In Britain with the reorganization of the London boroughs, when heavily duplicated bookstocks from different libraries controlled through widely different kinds of catalogue had to be amalgamated in the formation of a new borough, the computer offered an easy means of processing the information. Simple though they were, it is doubtful if any large-scale national experiment such as the MARC experiment could have been envisaged without *ad hoc* projects that were in effect pilot projects run independently and individually by libraries roughly between 1955 and 1965. But although technical capability of handling and reproducing bibliographic data is certainly essential and although its absence has been one of the causes of failure in the past, it is not the only essential factor; it is also essential to secure sources of supply, and also to have a context of demand in which the profession recognizes its need in the long-term view in spite of short-term disadvantages of a new system. Recent developments have involved not only computers but also the other two factors.

Arising from the critique by Seymour Lubetzky of the American Library Association *Cataloguing Rules* of 1949 and driven onwards by the enthusiasm of a number of perceptive and energetic librarians, the International Conference on Cataloguing Principles held in Paris in 1961 offered an opportunity for a fundamental reappraisal not only of the detail of cataloguing practice but also of its philosophy. For the first time in many years the profession had the opportunity of planning ahead and offering itself a code of practice flexible enough to adapt to rapidly changing times. The ICCP brought together librarians from all over the world, intent on taking positive action to standardize access to information through bibliographical description and the catalogues of their libraries. It acted as a focus for aspirations and intentions, since, unlike many international conferences, it was not content simply to hear different points of view, but to work out and offer an agreed set of principles that would form a basis for international cataloguing practice. This meant that it also focused attention on the problem itself, and thus reawakened the consciousness of the pressing need for international provision. By offering a solution to a problem clearly perceived by a few members of the profession it defined a context of demand that the rest of the profession could understand and endorse. So at one stroke the ICCP satisfied two of the conditions recognized in the nineteenth century as essential for co-operative cataloguing, particularly on an international scale: it promoted the realization of the need and the desire for its satisfaction and it offered the basis for an agreed code of practice.

Partially consequent on the ICCP the British and American committees jointly produced the new code of cataloguing rules that are now called the AACR. This provides for the intellectual analysis and representation of the names of documents and the names of their authors and could well have provided us with exactly the vehicle needed for the future. As Michael Gorman of the British National Bibliography said in reviewing the code, 'this is not only the best cataloguing code we have, it is also the best we are likely to have for a very long time'. But under the pressures of what we might call practical necessity large libraries and the associations that guard their interests encouraged the modification of the rules to conform with existing practice so that libraries adopting the rules should not find themselves in grave economic difficulties because of too much revision. We might in passing observe the irony that one of the large libraries principally concerned in encouraging the modifications then decided not to use the rules at all. In spite of the fact that this code is based more firmly than any preceding code on principles rather than on cases and might therefore be expected to be more adaptable in changing circumstances, we must ask the question: on what basis were the principles formulated and do we have yet again a code which is the culmination of preceding theoretical analysis rather than one that anticipates problems for the future?

One of the problems faced by all co-operative cataloguing ventures has been to ensure the source of supply. Jewett's call for improved copyright legislation was the first step towards ensuring that the library or agent principally concerned would receive the necessary material. In the succeeding century national libraries could rely increasingly confidently on copyright legislation to the point where the British National Bibliography could base its activities without question on the British Museum's receipt of copyright books. It is significant that the decision to separate BNB from the copyright office of the BM, and to rely instead on the copyright agent, caused the BNB more problems of speed and coverage than any other decision in its history. But the world of literature is international; if either the Library of Congress or the British National Bibliography were to feel confident that some kind of international coverage might be achieved it would be necessary to think on a broader front. Logically there are two ways to do this: by the exchange of national bibliographical data, or by the acquisition by one agency of material on an international basis, and the subsequent issue by that agency of bibliographical data on an international scale.

Curiously enough, the second of these alternatives, which might just have been possible in the first half of the nineteenth century, was never attempted until recently and it came closest to being realized in the Title II-C program of the Library of Congress. This ambitious program sought to collect literature on the widest scale the profession has yet seen, and for some time, with the full weight and capability of the Library of Congress behind it, the signs were promising. But, perhaps inevitably, the program is running into financial difficulties; earlier this year the budget was cut by about a third, and consequently special services have been eliminated, plans to include more developing and underdeveloped countries have been scrapped, and a lower price limit has been placed on automatic purchases (thus ironically making it difficult to obtain just those scholarly works whose inclusion justifies such a program). As we might have expected logically, it is the first alternative that is likely to yield the best results, although in all fairness we should remember that decentralization and the acceptance of records from different institutions do not necessarily provide the right answer. The Farmington Plan showed the damaging effect of insufficient technical resources. Now, however, a solution based on decentralization is offered by the development that also satisfies the last of the conditions for successful co-operative cataloguing: a powerful technology for handling and disseminating bibliographical data.

Against a background of the failure of the cataloguing-in-source experiment, and the King report on the automation of the Library of Congress, that library established an experimental project to produce a machine-readable cataloguing format. In 1966 what is now known as the MARC I pilot project began to develop the format and supply tapes to a group of sixteen participating libraries. The intention was to allow these libraries to develop their own systems for handling machine-readable bibliographic data, and to use their experiences in building the operational stage to be called MARC II. It is hardly necessary now to describe the format or the results of that pilot project, but I would like to emphasize one or two points that seem to me of significance for the future of co-operative cataloguing.

The Library of Congress seems to have begun by thinking of the MARC format as a cataloguing format, based originally on LC cataloguing practice and intended to produce authoritative card or book catalogues as output from a computer. Many librarians still think like this. Only a year ago one of the members of the MARC team stated publicly that he saw catalogue production as the chief use of the format for many years to come. And recently in the *Library Association Record* there was an eloquent doubt of the values of a machine-readable tape that might contain only two-thirds of the library's accessions, that cannot be relied upon to announce them within a week or so of the arrival of the book in the library, and that may have a different cataloguing style, based possibly on the shifting sands of the latest version of a cataloguing code. But this is to forget that there must always be a residue of local cataloguing in any library, that it is possible to function with a temporary, abbreviated catalogue entry (or even without one at all for a time), that no library's cataloguing style is perfect, and certainly very few libraries can honestly claim that it is consistent and correct throughout their catalogues and that it is only by adopting a standard that it becomes tried and accepted as a standard. It is also to continue to assume that these machine-readable tapes are there simply to produce human readable catalogues; but it is obvious from even a cursory study of automation in other fields and by an examination of what actually happened in several of the libraries participating in the MARC I project that the provision of a machine-readable unit record can be used more economically by seeing the catalogue as just another manifestation of processes that organize and handle bibliographic data.

When the Library of Congress began to develop the MARC II format in 1967 it called the format a *communications* format, and this is the name used on the manual first published last year. In other words, the designers themselves encourage a wider use of machine-readable bibliographic data, and the work at the Fondren Library of Rice University in Texas and at the Atomic Weapons Research Establishment in Aldermaston shows that it can support all stages of processing, from selection to dissemination. Indeed, Hillis Griffin, who helped to set up the MARC distribution service, has suggested that in time the catalogue itself may disappear in favour of an information network using MARC tapes as a data base.

Arguments about the nature and purpose of MARC will long continue, but I suggest that there is a more fundamental problem. We have now a recognition among the profession of the need for co-operation, hopefully on an international scale, but it is in danger of stopping short at catalogue production and catalogue exchange. We have an agreed standard of practice for bibliographical description, and in its basic principles it looks ahead, although in its expression it was compelled to amend its views in order to deal with present problems based inevitably on past tradition—and in some senses it looks backwards instead of forwards. We have a powerful tool in the computer, that can handle, store and disseminate information in greater quantity and at greater speed than ever before, but it is not designed basically to handle bibliographic data, which needs immediate and simultaneous access to large files consisting of alphabetical information, and we are therefore in constant danger of accepting machine constraints that are irrelevant and even damaging to our interests.

We are in danger of allowing theory and technology to leapfrog again. If we accept the theoretical assumption that the computer is just a bigger typewriter-cum-filing drawer, and if we base our design on a standard code of practice that solves yesterday's problems, then we shall ignore the capability that the computer now offers us, and co-operative cataloguing will briefly be realized, only to fail, and to fail us paradoxically in its realization, because if we insist on co-operation only in the production of catalogues then we shall inhibit the early realization of co-operation in other spheres, and by the time we have solved the theoretical problem all over again we shall have to seek a new technology.

Fortunately the signs are hopeful: more and more librarians are realizing the importance of the systems approach to the library; there are indications that the Library of Congress will adopt AACR at least for MARC; there are also indications that full international agreement will be given to a revised AACR that will emerge soon, and will be very like AACR (British text) in which any changes will be towards a reliance on principle rather than on cases. We have a chance, perhaps the first, to match our theoretical solutions to the technology now available. I hope we do not throw away that chance through ignorance, prejudice or suspicion. Individual costs and effort cannot always be matched by individual benefits. It is clear that in the context of automation it is no longer a question of *whether* or *why* but of *how* and *when*. The same is true of co-operation. The general benefit is undeniable; what we must do is to accept the principle and work as forcefully and sensibly as we can towards its realization.

DISCUSSION

MR M. W. HILL (National Reference Library of Science and Invention) suggested that since in any co-operative scheme, particularly an international one, it was crucial to be able to ensure that all those concerned should be clear that they were dealing with the same item, it was likely that co-operative cataloguing, with a machine implementation, whether leading to a total systems approach or not, needed the adoption of an International Standard Book Number to be widely acceptable. MR BATTY replied that experience with MARC had shown that some such provision would be a great improvement.

MR H. A. ROCHE (United Kingdom Atomic Energy Authority) said that the major problems in using co-operative cataloguing schemes such as MARC tapes were (a) the fact that possibly less than 50 per cent of books taken by a library are included and (b) the non-availability of the record at the time of receipt of the book. MR BATTY replied that it was necessary to accept such limitations for a time in order that a more complete system might be developed. It did not really matter if the book and the record were not received together.

MR J. ROLAND SMITH (United Kingdom Atomic Energy Authority) asked for information on the cost of MARC tapes. MR BATTY replied that in the United States libraries were at present being charged $650 per annum for the weekly tapes, but this did not nearly cover the cost of producing them. They would cost a lot more in this country, and it would probably be necessary to have some sort of government subsidy as a pump-priming operation.

MR A. H. CHAPLIN (British Museum) suggested that for a long time only a few libraries would have the computer facilities to use the MARC tapes or would need more than a fraction of the information on the tapes. Had any thought been given to the possibility that some of the larger users might act as centres from which information selected from the tapes would be distributed to other libraries?

MR BATTY replied that this had been implied all along. An experiment was in progress in Birmingham, a co-operative venture between two academic libraries and the public library. They were hoping to offer services to other libraries which would include maintaining the union catalogue for the West Midlands, and providing catalogues for individual libraries.

ELIZABETH MARCH (Rutherford High Energy Laboratory) asked about methods for covering non-book material on computerized cataloguing systems. MR BATTY said that this was an area that had not really been looked at. It would be more difficult to organize and involve the co-operation of a number of institutions.

DR D. J. URQUHART (National Lending Library for Science and Technology) said that the philosophy must be changed. There was no need to have a comprehensive holding record. There was no need to have the holding records or locating records combined with the biliographical description records.

MR BATTY replied that there were many approaches to the problems of bibliographical records. Human readable catalogues were a useful by-product of machine systems. It was not necessary to have one uniform code—a unit record was simpler. The reader needed a system that would help him.

MR A. H. CHAPLIN (British Museum) said that the discussions at the International Meeting of Cataloguing Experts led to the conclusion that the problem today was no longer the standardization of catalogue entries, but agreement on a standard form for a comprehensive bibliographical description, which would include the data needed by libraries for other purposes than cataloguing, e.g. acquisition—and those needed for the announcement of new publications and other activities in which publications were handled. The standard should include an internationally agreed format for machine-readable bibliographical records.

MRS W. I. VEASEY (B. H. Blackwell Ltd) said that the book trade was concerned with machine-readable book data, and would like to know what proportion of librarians would take the whole systems approach and use data for purposes other than cataloguing. The trade was concerned with pre-publication data to a much greater extent than data on publication.

CO-OPERATION IN ABSTRACTING

1. Co-operation in the production of textile abstracting services

K. C. ELLIS
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Paper presented at the 43rd Aslib Annual Conference, University of Warwick, Coventry, 21st–24th September 1969

THE services that form the subject of this paper are provided by five of the textile research associations:

British Launderers' Research Association
Cotton Silk and Man-made Fibres Research Association (Shirley Institute)
Hosiery and Allied Trades Research Association (HATRA)
The Scottish Textile Research Association (formerly British Jute Trade Research Association)
Wool Industries Research Association (Wira).

J. Leicester[1] has described how the Committee of Directors of Textile Research Associations was set up twenty-six years ago to co-ordinate the activities of the different textile research associations and how this body has been able to arrange co-operative activities including the textile abstracting service. Co-operation in textile abstracting services started, however, long before the establishment of CDTRA, nearly as long ago in fact as the textile abstracting services themselves. The first abstracts of the textile literature to be published in this country appeared in the *Journal of the Society of Dyers and Colourists* in 1884. In 1912 the *Journal of the Textile Institute* started to include an abstracts section and in 1921 the British Cotton Industry Research Association, as it then was, started to produce the *Shirley Institute Summary of Current Literature.* This last was originally produced for the benefit of the staff of the Shirley Institute but very quickly came to be used in the industry as well as the Institute. Co-operation started in 1922 when the textile research associations started to supply abstracts of the textile literature for publication in the *Journal of the Textile Institute.* Seven years later the Shirley Institute started supplying the *Journal of the Textile Institute* with the type that had been set up for the *Shirley Institute Summary of Current Literature* and from 1964 onwards the material was supplied as printed copy. In 1967 the abstracts section was separated from the *Journal of the Textile Institute* and renamed *Textile Abstracts.* This was basically the situation up to the end of 1968, with material for *Textile Abstracts* being supplied by the five textile research associations listed above and printed as separate sections. Further abstracts were obtained as a result of an exchange agreement between the Textile Institute and the Institute of Textile Technology, USA, who publish *Textile Technology Digest.*

By 1967 the increase in the quantity of published literature and the greater pace of modern industrial life had given rise to the well-known information problem. At the same time the cost of producing abstracting services, particularly the cost of the human, intellectual, effort required, had increased very considerably. The Shirley Institute was receiving approximately £6,000 per annum in direct contributions to its abstracting services, while the services were costing some £25,000 to produce. This meant that the members of the Cotton Silk and Man-made Fibres Research Association, i.e. a section of the British Textile Industry, were subsidizing a textile information service that was being used all over the world. This situation could not continue. The Shirley Institute decided, therefore, to examine carefully textile information and abstracting services and their production. The conclusion was reached that, because the need for information services and for quicker and more efficient information services is growing all the time, the only way to satisfy the needs in the near future would be by mechanized methods, particularly computer methods.

Additionally, by this time, it was not possible for the Institute to meet directly all the needs of textile research workers, including its own staff, for information services, since the subjects that would have to be covered include some aspects of chemistry, physics, mathematics, engineering, biology and medicine. It was necessary for people with such interests to make use of other abstracting services covering the appropriate fields. The conclusion was therefore reached that the Institute's abstracting services must be directed specifically to the textile area, must be put on a sound financial basis, with all users contributing to the cost of production, and must be designed to provide a basis for computer-based information services while still meeting the needs of the textile industry for an easy-to-use information service based on a published abstracts journal.

The introduction of mechanized methods of information retrieval removes human intellectual effort at the retrieval stage. This cannot be adequately replaced by computer processing. It has been said that it is unnecessary and even undesirable to interpose any intellectual activity by a third party between the user of a computer-based information retrieval system and the authors of the documents from which he is seeking information, since these two parties are experts in the same field and are said, therefore, to speak the same language. This is not true of an industry-oriented information service; people in industry do not speak the same language as research scientists although the latter publish information that is useful to the former. In fact, in the textile industry, the people of Yorkshire do not speak the same language as the people of Lancashire. It is therefore essential that intellectual effort be interposed between the authors of published literature and the users of a textile information service. Consequently, if intellectual effort at the retrieval stage is going to be reduced, more must be applied at the input stage if efficiency is not to decrease. In order that this intellectual effort should be effective it is necessary that it should be consistently applied. It was therefore necessary that a closer form of co-operation should be established than that which already existed.

After discussions between the textile research associations and the Textile Institute it was agreed, in August 1968, that the former should publish an abstracts journal and the latter a review journal, *Textile Progress*. Accordingly both *Textile Abstracts* and the *Shirley Institute Summary of Current Literature* ceased publication at the end of the 1968 volume and a new journal, *World Textile Abstracts,* started in January 1969. One of the major aims in co-operative abstracting is economy. It was therefore important that the field of coverage of the new journal should be determined. The aim was to cover all journal articles, patent specifications, books, etc., with a real textile content or with direct textile relevance without overlapping to a serious extent other abstracting services. It was therefore decided to omit the production of natural fibres (covered by agricultural abstracting services) and the production of polymer material, dyestuffs, and textile auxiliaries (covered by *RAPRA abstracts,* the *Journal of the Society of Dyers and Colourists* and *Chemical Abstracts*) unless documents dealing with these subjects contained information about textile properties, and to concentrate coverage on all the literature directly relevant to textiles, i.e. from the existence of a fibre to the discarding of a textile product.

An editorial board was established consisting of senior staff members of each of the five co-operating research associations which meets as required, usually at intervals of two to three months, to discuss general problems and policy. In addition, meetings of a 'teach-in' nature are held whenever it is felt desirable in order to bring about a consistency of approach among all those who write abstracts for *World Textile Abstracts.*

Abstracts are written at each of the five co-operating research associations and sent to the Shirley Institute, where they are assembled into a unified publication. Printing, distribution, etc., are arranged and supervised by the Shirley Institute. In general each research association covers its own subject areas but the areas of linen and lace are also covered. In the near future it is hoped that journals that are mainly non-textile in nature and publish only a few articles of textile interest will be divided amongst the research associations so that each journal is completely covered by one research association.

Each abstractor not only writes an abstract for each document but also writes subject index entries and keyterm entries. The latter, which will form the main basis for computer information retrieval systems, are based on a slightly modified version of the *Thesaurus of Textile Terms covering Fibrous Materials and Processes* compiled by Professor S. Backer and his colleagues at the Massachusetts Institute of Technology. These keyterms together with the appropriate bibliographic details will be entered on punched paper tape and subsequently read into a computer. After checking, this material will be stored on magnetic tape and will be made available for purchase by information services.

It is hoped in the future to develop international co-operation in the provision of international services. A particular area in which this would be most valuable is that of patents, where the legal language of the patent presents considerable additional difficulties.

The policy of the textile research associations is to expand their abstracting services as funds permit until a comprehensive, efficient service is achieved.

REFERENCE

1 LEICESTER, J. Co-operation among or within Research Associations. *Aslib Proceedings,* 21, xi, 1969, p. 428-35.

CO-OPERATION IN ABSTRACTING

2. From Co-operation to Contracts

D. R. DAWSON and R. G. J. ELLIOT
Rubber and Plastics Research Association of Great Britain

Paper presented at the 43rd Aslib Annual Conference, University of Warwick, Coventry, 21st–24th September 1969

THE Rubber and Plastics Research Association of Great Britain (RAPRA) has, since 1923, provided a conventional abstracting service. The major scientific and technological abstracts are published in a monthly abstract journal, originally entitled *The Summary of Current Literature* but today known as *RAPRA Abstracts*. Subject, patent, and name indexes are provided for each volume. From the beginning two of the main objectives of *RAPRA Abstracts* have been the reduction of essential reading time and the reduction of individual abstracting effort within the industry. The efficiency with which these objectives were met obviously decreased as the rate of publication of scientific and technical literature rapidly increased.

During recent years many companies have come to appreciate more keenly the tremendous burden imposed by the abstracting of the present-day flood of technical literature. This burden, together with rising costs and staffing difficulties, have caused many information units to look to the centralized and commercial sources for help in maintaining their own current awareness services. But the conventional sources of this type, such as *Chemical Abstracts* or *RAPRA Abstracts,* although useful for retrospective searching, may for current awareness purposes prove too expensive or not sufficiently definitive to meet particular requirements.

It was with such problems as these in mind that RAPRA began first to initiate shared abstracting with four other organizations. This move was aimed to reduce costs and ease the burden on existing staffs and we have to admit our motives were not entirely unselfish. Later the sale of selections of classified abstract cards was commenced in order to meet specific requirements of individual members. These two projects, coupled with the installation of offset lithography equipment at Shawbury, led to the presently operated system of Current Awareness Bulletins and Abstract Cards. It is these three projects that are discussed below.

Co-operative abstracting

Polymers can be roughly divided into three categories—rubbers, thermoplastics, and thermosets. RAPRA and the British Plastics Federation between them covered the whole field of polymers but had one area in common, the thermoplastics. Eight years ago the two organizations reached an agreement to share the abstracting of eighty-four of the major journals. A policy for selection to meet the requirements of both organizations was agreed and each produced duplicates of their own abstracts according to the other's format. The development of a common form and a common classification system would have been required in order to reduce duplication of effort still further. However, this attempt at co-operative abstracting ended three years later at the end of 1964 with the transfer of the Federation information service to RAPRA. From this time RAPRA's abstracting programme was extended to cover all polymers.

During the last year of the RAPRA/BPF exchange of abstracts the scheme was extended through the co-operation of the Plastics Division of ICI, the Dunlop Co. Ltd, and two units of Monsanto Chemicals Ltd. By the beginning of 1965 about one hundred of the major journals were divided among all five organizations and a subject profile for selection was formulated to meet the requirements of all those co-operating. The humble wheel, an invention equally historic but considerably less innocuous to information workers than Caxton's fiendish machine, formed the pattern for the operation of the scheme, RAPRA being the hub and the member firms the spokes.

Three of the units supplied abstracts on cards typed to RAPRA's specification. The fourth unit supplied copies of their bulletin from which RAPRA produced abstract cards by Xerography, a common form for bibliographical details having been agreed. From the central collection the necessary copies were made, again by Xerography, for dispatch on a weekly basis to the various co-operating units.

This second phase of shared abstracting was brought to an end during 1967 as we developed our third project, the Current Awareness Bulletins. The co-operating units now subscribe to this project and each receives bulletins compiled to meet its individual specifications.

The remaining phase of this co-operative abstracting scheme concerned patents. For four years there was a direct exchange between the Plastics Division of ICI and RAPRA, ICI supplying abstracts of British patents and RAPRA supplying abstracts of United States patents. This phase came to an end when both organizations commenced to receive abstracts of British patents from Derwent Publications Ltd at the end of 1966.

Our five years' work in the field of co-operative abstracting did save us reading and abstracting time but it did not eliminate the checking and classifying processes. As the interests of the organizations varied considerably, it was not found possible to agree to a common system of classification. For efficient operation there were four essential requirements: a clear understanding of the required profile of interest; agreement about style and content of the abstracts; systematic records for the detection of delays and omissions; and prompt communication between the participants if snags arose. These requirements may sound simple but their achievement was not always easy.

Provision of selected abstracts

During 1964 we began to develop a service aimed at reducing reading time. We offered for sale to our members photocopies of selections of our classified abstract cards. Selection was made by profiles of interest supplied by the individual companies, these profiles being translated into the terms of our classification system. Patents, trade literature and reports as well as journal articles were included, the abstracts were dispatched weekly, and cost 3*d* each. By the end of 1966 about thirty members were receiving this service and about 12,000 cards a year were being sold. The delay between the receipt of the journal at RAPRA and the receipt of the abstract by the member was on average one to two weeks. With this development we had the beginnings of an abstract service tailored to meet the requirements of our members but we were aware of the need to expand the service.

Current awareness bulletins and abstract cards

During 1966 offset lithography equipment was installed at Shawbury for the production of our own publications. This development now made it possible for us to consider producing abstract bulletins, each tailored to meet the requirements of individual members and to be sold under contract. This service is now well established and runs in parallel to *RAPRA Abstracts,* twelve Current Awareness Bulletins each compiled to meet the specifications of individual members are being produced regularly, the majority weekly, one bi-weekly, two monthly, and one quarterly.

At present the service is confined to journal literature. Of the 600 journals taken regularly at RAPRA the main articles from 270 are used for the scheme. These include the major rubber, plastics, and scientific academic journals. They provide about 8,000 abstracts per year out of the total 9,000 collected for the journal section of *RAPRA Abstracts*. The abstracts are classified by the RAPRA Code and keyworded. Three of the weekly bulletins contain the complete weekly input of abstracts, the remainder contain selections of abstracts made either by subject profiles or by selection of journal titles. The time lag between the receipt of the journals by RAPRA and the receipt of the completed bulletins by the customer varies from three weeks to three and a half months, depending of course upon the frequency of publication stipulated in the contracts.

Content and format of the abstracts has been agreed so that one style meets the requirements of all the contractors and RAPRA. The initial copy is typed on card by means of IBM Executive typewriters, a 12-point type face being used. The cards are laid up, in the majority of cases under broad subject headings as supplied in the contract, and the relevant headings inserted. An appropriate reduction in size is made on the plate maker. The pages can be single or double column and can be printed single or double sided as required. A contents page and a list of the particular issues of journals covered by each bulletin can be included also.

In addition to varieties of style the twelve bulletins also vary in content from 400 to 8,000 abstracts per year and from multiple supplies of twenty-five to 1,500 copies of each issue. Distribution can be *en bloc* to one location or according to a customer's mailing list.

One of the bulletins containing a complete set of abstracts is so designed that the plates can be used for the printing of 6 × 4 in. abstract cards. A total of nineteen companies subscribe to the card service, three receiving complete sets and sixteen receiving selections made by profiles provided.

Bulletin and abstract card subscription rates

For this service there is a basic subscription of £50 per year. If a complete set of cards is required there is a further charge of £150, making a total of £200. If a selection is provided the first 1,000 abstract cards per year is supplied within the basic subscription of £50. The price then rises to a maximum of £200 according to the number over 1,000 received each year. For the recipients of multiple copies of bulletins make-up charges have to be added to the figures just quoted. They are based on a make-up charge of 6*s* 6*d* per page plus a further charge of 1*s* per 100 copies of each page. It will be appreciated that the costing for each bulletin contract is somewhat complex and indeed the prices of the bulletins as supplied at present range from about £80 to £800 per year. The recipients of bulletins can receive a set of the abstracts in their bulletin on 6 × 4 in. card at no extra charge. If multiple sets of cards are required there is a flat rate of £6 10*s* for each additional set.

The card service is also available to non-members of RAPRA at double the subscription rate quoted above.

The building of this service to its present state took about two years and we are indebted to the Plastics Division of ICI, for whom we produced the first bulletin, for their close collaboration during the early stages. The experience we gained in those first months has enabled us to develop what is, we trust, a valuable parallel service to that provided by *RAPRA Abstracts,* and one which now permits us to serve minority requirements.

Conclusion

We have all heard it said that abstracts produced by central agencies are not sufficiently pertinent for the current awareness needs of individual companies. Perhaps in a Utopian world this is true but our work at RAPRA during the past eight years has shown us that it is possible to produce results acceptable to individual companies. We have heard also that it is not politic to recommend to management the use of abstracting agencies. We all recognize the motivation behind this argument. As the output of literature increases, those who find themselves unable to make use of outside sources run the risk of becoming collectors and collators only and will fail to fulfil that important function of interpreters of the printed word.

In conclusion, ladies and gentlemen, Southey tells us that 'if you would be pungent, be brief; for it is with words as with sunbeams—the more they are condensed, the deeper they burn'. Salutory words for abstractors—and speakers.

CO-OPERATION IN ABSTRACTING

3. Co-operative abstracting services: food

E. J. MANN
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Paper presented at the 43rd Aslib Annual Conference, University of Warwick, Coventry, 21st–24th September 1969

IT is no exaggeration to say that 'co-operation' has been the keynote of our success in publishing the first issue of *Food Science and Technology Abstracts* within one year of the establishment of the International Food Information Service.

The development period

I will not bother you with an account of the history leading up to the establishment of the International Food Information Service but would like to highlight some of the co-operative projects during the development period. When we first started to think about setting up a comprehensive food science and technology abstracting service we rapidly became aware of the total lack of concrete information available on the nature and sources of the primary food science and technology literature. We therefore decided to carry out an international survey of the world food literature. This survey was carried out as a co-operative venture between the Commonwealth Bureau of Dairy Science and Technology, the Institut für Dokumentationswesen, Frankfurt, and the Institute for Nutrition, Potsdam. During the course of the survey we analysed one year's contents of some 2,000 primary journals for their food science and technology contents, classifying the papers by aspect (discipline) as well as by commodity and by language. The results of the survey have been summarized in an article (Mann, 1966) and were subsequently published in book form (Mann, 1967). During the survey work we established useful contacts and obtained the co-operation of research and documentation centres in many parts of the world. Some of these contacts have led to lasting working relationships. The survey results provided us with the bricks to build up the International Food Information Service, i.e. with an evaluated list of approximately 1,000 primary journals which was to form the main input material for our Food Abstracts journal. For each primary journal we had information on the anticipated number of food science and technology papers in one year's issues, their scientific and technical nature as well as the languages in which the papers were written. Following the signing of an agreement to establish the International

Food Information Service, there followed a period of feverish activity during which we developed our detailed plans for journal selection, abstracts procurement, working methods and indexing by a computer-assisted system. Here again co-operation came into play, for we were fortunate enough to obtain a generous grant from the Office for Scientific and Technical Information with the aid of which we were able to plan and develop the service to the point of journal production in a period of approximately ten months.

Co-operation at the management level

The International Food Information Service is a truly international co-operative venture established in February 1968 with the signing of an agreement between the three initial partners, the Commonwealth Agricultural Bureaux, the Institute of Food Technologists (USA), and the Institut für Dokumentationswesen (Federal German Republic). Since then, PUDOC, the well-known Agricultural Documentation Centre of the Netherlands, has become a fourth partner. There is a Management Committee with up to two representatives from each of the partners, which meets as often as is necessary to administer the affairs of the service, an editor who controls journal production from the editorial office attached to the Commonwealth Bureau of Dairy Science and Technology at Shinfield, and a German manager, in charge of the computer processing and journal printing operations in Germany.

It is perhaps a key to the success of this whole venture that each of the four partners participates actively in the operations of the service. Quite apart from the direct financial support given by the partners, their participation takes the following forms:

(i) The Commonwealth Agricultural Bureaux, through the Commonwealth Bureau of Dairy Science and Technology at Shinfield, is responsible for the editorial aspects of the production of *Food Science and Technology Abstracts* (i.e. procurement of abstracts, indexing, editing).

(ii) The Institut für Dokumentationswesen in Frankfurt is responsible for the computer-assisted printing of the journal, including the programming, and the processing of the abstracts and indexes.

(iii) The Institute of Food Technologists, Chicago, provides abstracts of food patents from several major countries—promotes the sales of *FSTA* widely among its members and through its publications, and is developing a computer-based information retrieval service from *FSTA* tapes.

(iv) PUDOC in Wageningen are providing abstracts for *FSTA* through a special abstracting unit established in the Netherlands, support an abstractor post for the IFIS at the National Lending Library and promote the sales of *FSTA* in Europe.

Co-operation in abstracting

The production of the initial output of the International Food Information Service, the monthly journal *Food Science and Technology Abstracts,* is based on national and international collaboration at all points of the production chain. The journal contains about 1,000 abstracts each month and the three main sources of literature covered are (a) approximately 1,000 primary journals of which nearly 500 are foreign language journals; (b) food science and technology patents from eighteen countries; and (c) textbooks on food science and technology from all parts of the world.

The ideal way of producing such a journal would probably be to assemble a team of linguists/scientists around a large central library containing all the material required and to scan and abstract all the material on the spot. Unfortunately, there were a number of good reasons why this was impracticable and we developed a system of abstract procurement based largely on co-operation. At the national level, apart from the central abstracting, indexing and editorial unit at Shinfield, we have established small full-time abstracting units at the National Lending Library and the Tropical Products Institute with the kind collaboration of the organizations concerned, making use of the excellent library facilities at these establishments.

Furthermore, apart from making use of a number of individual outside abstractors, we have made the following major arrangements with outside organizations for scanning/abstracting of the world food literature:

1 The Institute of Scientific Information of the Ministry of Food and Agriculture, in Prague, Czechoslovakia, is covering nearly one hundred major East European food journals for us.

2 The Institute of Nutrition in Potsdam, DDR, is covering thirty-six German language journals.

3 A special committee of Japanese food scientists, set up under the aegis of the Institute of Food Technologists, is covering the very important Japanese food literature contained in some forty primary journals.

4 BFMIRA in Leatherhead are scanning/abstracting eleven journals for us under an exchange arrangement.

5 The Metal Box Company in London is scanning/abstracting twenty-two packaging journals.

6 Biocentralen in Copenhagen, Denmark, are covering fourteen major Scandinavian food journals.

7 The Research and Productivity Council, New Brunswick, is covering Canadian journals.

8 A. Woolcott & Co., in London, are monitoring and abstracting world food patents for us.

To this must be added the arrangements made with the Dutch abstracting unit, to which I referred earlier on.

At our Head Office in Shinfield we have developed a system of recording and work flow, which enables us not only to maintain close control over the input by collaborating organizations and individual abstractors but also to maintain a regular flow of edited abstracts to Germany for further processing and printing. We are working with two major records: (a) journal record cards and (b) abstract forms. As regards (a), a central journal record card index has been established, each journal covered by *FSTA* being recorded on a separate card. Each card contains basic information on the journal in question, e.g. frequency of appearance; library locations; who is scanning/abstracting it, etc. For each journal part received we record the date of receipt, vol., part no., year of publication, initials of scanner, first and last page numbers of the articles picked up (if any), section number of abstract, initials of abstractor, date of abstract receipt and, finally, the abstract number in *FSTA*. Duplicates of the relevant record cards are held by all the outside organizations/individuals covering certain journals for us. Periodically, they are asked to send us photocopies of their record cards so that we can transfer the information on to the master record card.

The abstracts are typed on to NCR (no carbon required) forms (b) specially designed to speed work flow and also to facilitate the subsequent conversion of the material to machine-readable form.

Co-operation in the production chain for *FSTA*

Finally, I think I can best highlight for you the role of co-operation in the production of *FSTA* by quickly taking you through the main elements in the production chain.

1 Journals are scanned and abstracted by our own units at Shinfield, the Tropical Products Institute, the National Lending Library, as well as by the co-operating outside organizations and individual outside abstractors.

2 The abstracts are sent to the editorial office at Shinfield, where they are typed on to the special abstract forms, edited, indexed and put in section order.

3 Weekly batches of the abstracts are dispatched to our sub-office at the Institut für Dokumentationswesen, in Frankfurt.

4 The abstracts are converted into machine-readable form by Flexowriter typing by a Service Bureau in Frankfurt.

5 The paper tapes generated by the Flexowriter are converted into magnetic tape at the Zentralstelle für maschinelle Dokumentation in Frankfurt and, after various correction procedures, structure checks and computer collation of the indexes, a final magnetic tape emerges containing the material for the abstract section and the author and subject indexes.

6 This magnetic tape is converted into TTS Linotype tape.

7 The journal is printed by the TTS Linotype process at the Mainzer Verlagsanstalt at Mainz, two sets of proofs being corrected by our Frankfurt staff during the printing cycle.

8 The journal is dispatched to subscribers from the printers in Mainz on instructions received from the Central Sales Branch of Commonwealth Agricultural Bureaux, which handles subscriptions to *FSTA*.

I have, of course, greatly simplified the picture in order to highlight those steps in the production cycle which involve co-operation. Complicated though this production cycle may seem, we are aiming to achieve the production of the monthly parts of *FSTA* within eight weeks of sending the first weekly batch of abstracts and within five weeks of sending the last weekly batch of abstracts to Frankfurt. Summing up, I have tried to demonstrate to you how co-operation has helped us in building up a new international food documentation service on a relatively sound and economic basis.

REFERENCES

MANN, E. J. (1966). *Dairy Sci. Abstr.*, 28 (12), p. 603-6.

MANN, E. J. (1967). *Evaluation of the world food literature. Results of an International survey.* CAB: Farnham Royal, Bucks, England.

DISCUSSION

MR B. STERN (Wellcome Foundation) asked to what extent RAPRA had been able to negotiate with *Chemical Abstracts* to avoid duplication in *POST* and RAPRA's own current awareness services. MISS DAWSON replied that there was no exchange agreement with *POST*. They were hoping to get the problem sorted out through the ACS Division of Rubber Chemistry.

MR V. BISKE (Burmah Oil Trading Limited) asked if *Food Abstracts* covered either material included in Current Food Additives Legislation (FAO) or publications or reports from the Food Law Research Centre, Institute of European Studies, University of Brussels. MR MANN replied that they did not pick up material on food legislation unless it occurred in the periodicals.

MR A. SANDISON (National Reference Library of Science and Invention) said that Mr Mann had spoken of evaluating 2,000 periodicals from which 1,000 were selected for abstracting. What percentage of useful papers were accepted as not justifying the work on the 1,000 journals rejected? Was there scope for co-operation with other abstracting services which did cover those journals to pass on information about relevant papers? MR MANN replied that the evaluation was based on lists supplied by the Americans. He was convinced that they were not missing anything of value.

MR J. ROLAND SMITH (United Kingdom Atomic Energy Authority) asked how long *World Textile Abstracts* had been using co-operative keyword indexing, and whether this co-operation by a number of organizations had led to any serious inconsistency and, if so, what amount of central editorial effort was needed to put it right? DR ELLIS replied that this had been done since the beginning. They had a subject index editor and were doing experiments based on the work of Dr Lynch on the generation of subject index entries from titles.

INTER-PERSONAL UNCO-OPERATION: SOME CAUSES AND CURES

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Paper presented at the 43rd Aslib Conference, University of Warwick, Coventry, 21st–24th September 1969

Introduction

THIS is a very odd paper, certainly one of the oddest ever published by Aslib: odd in subject, form and author. A patient reader will find out why.

When I was asked to speak on 'Unco-operation' the Conference Committee gave me *carte blanche,* except to hope that I should be amusing. (I was assured, by the way, that I was not selected because I was regarded as particularly unco-operative!) As the rest of the Conference was about co-operation of various kinds, I can only suppose I was billed as light relief. I believe in trying anything once (even that), so I accepted.

Kinds of unco-operation

1 *General*

But what to talk about? The more I thought, the bigger the subject looked, like Alice's surroundings when she ate the mushroom. Following the alphabet, I thought of arrogance, bores, crime, divorce ... kleptomania ... quackery ... Ulster, vandalism, war, xenophobia, Yahoos, zooming aircraft (or zero-audibility), autocracy, bloody-mindedness . . . ; the list is endless. I omit the easy letters; this paper will be long enough anyhow.

2 *In information work*

Even here I thought of abstracting, bookbinders, cataloguing . . . KWIC indexes . . . questioners who do not know what they want . . . translations, UDC, vagabond staff (or vacancies, unfillable), wrong references, Xerox (and other) copiers which break down, and 'yours faithfully' (I *might* have made that 'you lot') all, in various ways, subject to, or manifestations of, unco-operation. But of some of these, perhaps, more anon.

3 *In publishing*

I thought of this first, in fact, as which of us would not? But the sins against us of publishers were wittily and faithfully dealt with by Mr Agard Evans (whom it is a genuine pleasure to have as my Chairman) before an Aslib meeting, including publishers, in London years ago[1]. This has not prevented the continuation of old sins and the invention of new ones, like 'controlled circulation'. One of my pet aversions was being bombarded with brochures about books totally irrelevant to my work, like *The Laws of Malawi,* or *The Origins of Trotskyism in Ceylon.* But alas, the people who do these things do not come to Aslib Conferences. (What fun we should have if they did, *cognito,* to coin a word!)

Unco-operation between individuals; the literature

Now it happens that I have, all my adult life, thought about and tried to practise inter-personal co-operation, which does not mean that I have not frequently failed. I surveyed my modest stock of knowledge and experience. How much more must real experts have? So I set out to find what others had written.

Unco-operation, it soon appeared, is a non-subject in the literature, or indexers consider it beneath their notice. This is probably the first paper explicitly devoted to the subject for many years. I should be most interested to hear of any others. I found none. (The third Aslib annual lecture[2] does, it is true, deal with an aspect of unco-operation.)

When we come to co-operation, we find that the very name has been misappropriated. Articles in encyclopaedias (except for the *International Encyclopaedia of the Social Sciences*) under this heading will tell you about Robert Owen, the Rochdale pioneers and co-operative movements in retailing, agriculture, etc., but about co-operation in general, not a word. Even the first-class article in the encyclopaedia named has little or nothing on inter-personal co-operation.

The literature divides into: (*i*) human or inter-personal relations; and (*ii*) co-operativeness, a concern of psychologists. Part (*i*) subdivides into two groups. There are the practical books and articles, each mostly the essence of one man's experience, and perhaps reading, but not research. Nearly all are devoted to human relations in some special field, e.g. management or nursing. I found one masterly general work[3], though I cannot agree with the author's final conclusions. A much more famous general work[4] is, I think, of less value. Of those adapted to special fields I can particularly recommend one[5]. Most are rather simple accounts of 'how I run my human relations good'. I had read some of these and learned little.

Then there are the books on research by sociologists and social psychologists. Here (as a scientist) I felt I had crossed the Styx into a strange underworld, full of dim wraiths clad in billowing veils of jargon. One is prepared for a subject like this to have its special terminology, daunting to the layman, but not for most authors to have their own! This makes it very uphill work to get to grips with what these authors have found out, in limited time. From trial borings sunk in various places I did not derive much payable ore. From my limited excavations, research on the real personal causes of co-operation or unco-operation has not got beyond what the practical 'human relations' men know, in ways useful to the layman. It is, of course, a very difficult subject to do research on. The work most useful and intelligible to me was by M. Argyle[6].

I also dipped into many, and read two, general works on psychology and social psychology, without learning much on my subject. I said that co-operativeness was a concern of psychologists; it seems to be a minor one. Again, it is a most difficult field. Enormous efforts have been put into developing tests for measuring mental abilities and tendencies. Except for intelligence (or whatever it is that 'intelligence tests' measure) most even of the so-called 'objective tests' are subject to conscious faking, desire to impress, or self-deception by the testee, and to the intrusion of extraneous factors.

A recent American book[7] lists 412 such tests. There is not one for co-operativeness. Scanning the list, I found one for 'altruism', but nothing else of relevance. This test proved to be for children aged six to twelve. When you have heard the details you may agree that this is just as well. In this test, a board is used down which a ball rolls into a red or a black area. The child is told that if it rolls into one, he or she will get a piece of 'candy'; if into the other, he will not. This game is played for a while. Then, when due for some more candy, the child is sometimes told that there are lots of poor children in the world who have no candy, and asked if he would like to give up his piece so that they can have some. The proportion of assents is his score for 'altruism'.

This seems to me rather more a test of the child's appetite, digestive powers, credulity (that the poor children will get what he gives up) and the amount of candy he already has.

(In passing, you might like to hear of some of the other tests which might one day be applied to librarians and information workers. They include 'liking for people'; 'general knowledge'; 'cautiousness in statements'; risk-taking with unqualified statements'; 'reading speed under frustration'; 'persistence in absurdly vague or difficult tasks'; 'memory for confused materials'; 'classification fluency' (simple classification, of course, not our kind); 'classification under disapproval' (here the tester makes disparaging comments about the testee's efforts); and 'classification under distraction and discomfort' (culminating in unexpected electric shocks). A lovely life, my masters, when the psychologists get going on us! Call no librarian happy till he is dead! The dead will be free of this at least, unless, perhaps, they have been very bad librarians.)

A real literature search for this paper would have taken something like a year, and to absorb and appraise the results a lifetime. I have had six months, with a good deal else to do. However, as evidence that I have not been quite negligent or mistaken, I quote from the latest edition of *Chambers' Encyclopaedia*, under 'Personality':

'Our formulated knowledge of personality has advanced little beyond the *Characters* of Theophrastus (387–272 BC) and the classical delineations of the great novelists. . . . If a science of personality is to be established, it must render possible the formulation of general laws enabling us to explain and predict the behaviour of the individual with real precision. This daunting task may never be wholly achieved.'

What makes people unco-operative?

I have found no work which sets out clearly and usefully even the main causes of inter-personal unco-operation, as opposed to what you do about it when manifest. (I am not saying there are no such works; I should be most interested to hear of any.) So I shall tackle this theme as well as I can. By causes, I mean, of course, immediate causes. These in turn go back to genetic and environmental factors in a way we can sometimes dimly discern in individuals, but not generally.

In what follows I assume throughout that the *ends* to which co-operation is directed are good, and agreed. I am not concerned with vice, deceit, etc. I also exclude influences from the organization. (People may, for example, co-operate better if they work under some pressure.) I am concerned only with what makes an individual unco-operative.

The evidence, I think, is clear that co-operation is not inborn, but learned (if at all) mostly in childhood and youth as part of the process of adapting to an increasingly social environment. Love and security are vital. People from broken homes, we know, tend to be unco-operative, juvenile delinquents, even criminals. But the process does not depend on advanced culture or civilization. Eskimos and Australian aborigines, for example, bring up children to be secure, happy and co-operative. People such as missionaries have gone to teach the Eskimos how to live, and stayed to learn, because, I believe, unco-operation among them is virtually unknown[8].

So what are the main traceable causes of individual unco-operativeness?

Cause 1: *Inability to see any other point of view*

A man once asked to see his Town Clerk. At the interview, he said: 'I want to find out who my landlord is. Can you help me?' Said the Town Clerk: 'That shouldn't be difficult. To whom do you pay your rent?' 'Rent? Rent?' said the man. 'I've lived in that house ten years and never paid any rent! But I'll tell you something. If my landlord doesn't repair my roof pretty soon there's going to be one hell of a row!'

An extreme case, admittedly. Educated people are not often as bad as that, but it does happen. I know no reliable cure.

Cause 2: *Insecurity*

My wife once worked in an office where an elderly Mr Murdoch worked at a corner desk making entries in a large book. Nobody was ever allowed to look in it, and it was locked up when he went out, or home. Sometimes he gave information to others from it, but always in their private offices. Everyone thought it must be very secret and difficult.

Then he fell ill. His desk had to be forced to get the book. To his office-mates' amazement, all he had been doing for years was to enter quite simple details from shipping documents, which an intelligent school-leaver could soon have done for half the salary. He had created an air of mystery to bolster his importance, i.e. to assuage his inner insecurity.

It could, perhaps, be argued that insecurity underlies nearly all the other causes I list. In younger people psychiatric treatment may help, but for the Murdochs of this world it is usually too late. But here I am out of my depth.

Cause 3: *Conviction of superior importance*

I come of a theatrical family, and hear stories of show-business from relatives still in it. A theatrical production is, obviously, an example of intense co-operation on- and off-stage. Chances for unco-operation are few. One is 'up-staging'. An actor ('the male embraces the female' as usual) retreats so far up-stage that his co-actors must turn away from the audience to speak to him. This hampers them, since an actor's face and voice are his main tools. The effect, of course, is to concentrate the audience's attention on the culprit, and this is why it is done.

A female star, notorious for this, had to play a long scene in which she walked about, while a younger but famous actress sat in a chair. The latter, tired after a few nights of trying to act with her chin on her shoulder, picked up her chair, took it up-stage and carried on from there, collecting a very 'dirty look' in the process. The next night she was up-staged again, went to repeat the manoeuvre, only to find her chair was *screwed to the stage*! Only death or disaster cures this, I think!

Cause 4: *Agreement as to ends, but not means*

One example must suffice. A man is appointed to a senior position, which requires him to review and appraise existing methods, and perhaps advise on and introduce new ones. As a new and senior man he is, of course, a threat. He will come under subtle pressures in all sorts of ways to accept existing practices. This does not mean that the other staff are fools or 'pig-headed', merely, perhaps, 'set in their ways'. It is human to dislike change. If our man is to do his job, he must keep an open mind, and not accept the old ways. It may well be for the ultimate benefit of all that he should do this. But he will be accused of 'unco-operation', and unless his own boss gives him open backing, or is perceptive enough to see the cause of the trouble, things may go hard with him.

Cause 5: *Private difficulties*

Young Joe, who has played in the first team for months, learns one week-end that he will not be playing on Saturday. For a day or two he is moody, cross, unco-operative; then he gets over it. Someone else, who suddenly becomes unco-operative, may have been jilted, or have money, family or marital problems. We normally see little of our colleagues' private lives beyond what they choose to tell us. We should be ready to allow for what we cannot see.

Cause 6: *Lack of trust*

People will not co-operate with us if they do not trust us. (Here the fault is ours; we have to win trust.) When working during the war with the Royal Canadian Mounted Police I heard a story which illustrates this well.

It is well known, I think, that in the days of the Old West the Indians in the USA were very badly treated. Lands reserved to them by treaty were filched when found to contain oil or minerals. Their principal oppressors were the US Cavalry, who treated them as little better than vermin. In Canada things were better managed, and the Mounties were the friends of any Indian who obeyed the law.

One tribe found life in the USA so intolerable that they applied for permission to settle in Canada. Ottawa approved, and a place and time were fixed for the crossing. A Mountie detachment was there to supervise and show them where to go. In those days, in cooler weather, the Mounties wore navy-blue cavalry overcoats; from a distance they could be mistaken for US Cavalry. Approaching the border, the Indians jumped to the conclusion that their bitter enemies had come for a final battle. In a flash, every brave had an arrow on his bowstring. The chief Mountie officer, sensing what was in their minds, raised his open palm in the sign of peace, and slowly unbuttoned and threw aside his top-coat to reveal the scarlet tunic below. In a few moments every bow and arrow was on the ground.

Nobody offers us trust on a plate; we have to win it. How? I suggest by being competent in our jobs, and not promising anything we are not pretty sure we can perform. Even so, there will be times when utterly unforeseeable things prevent us from keeping a promise. Then, go to your colleague and explain; he will nearly always understand.

Cause 7: *Belief in one's own superior knowledge, diligence, skill* (*or any other virtue*)

We virtually all, if we are honest with ourselves, think we are pretty good, and others less so. We tend to think, and a few even say: 'If other people did as good a job as I do, this firm (department, institute, library, etc.) would get on a lot better'. This tends to make us unco-operative, because it is not *our* fault when things go wrong.

We also virtually all, by the age of thirty or so, arrive at a code of values by which we try to live, and by which we judge ourselves and others. It is hardly surprising if, judged by our own code, we are pretty good, and others less so. We do not all realize that other people have other codes, by which *we* may not show up so well. This realization is, I think, the beginning of maturity, the gate of the path to wisdom. But that is not what I am here to talk about.

'Orthodoxy is my doxy: heterodoxy is your doxy.' I once knew an office manager for whom punctuality equalled all other virtues combined. Silly, perhaps, but if you were unpunctual you had to be pretty good in every other way to get by. That was *his* code. How could you prove him wrong?

Cause 8: *Insensitivity*

There is a quality little esteemed, and therefore little discussed or written about, in the Anglo-Saxon world, to such an extent that we have not even a proper word for it. It is really two-fold:

(i) The ability to sense what is passing through another's mind, or may be expected to pass in certain circumstances.

(ii) The ability to respond to their feelings (hopes, joys, fears, sadnesses, emotional needs) and help them.

It is symptomatic of our neglect that 'sympathy' (from the Greek for 'feeling
ith') which should mean this, and whose analogues in other languages do
this, has been debased in English almost to what we express when
bereaved, and if we do not know them well or like them, our 'sym-
formal or even insincere.

rds: consideration, tact, sensitivity, responsiveness, empathy,
n various ways, and not strong enough. Sensitivity can be to
anything, but having defined my meaning I shall use it for

Our widespread insensitivity is due, I think, to our Anglo-Saxon tradition of 'rugged individualism'. It has been watered down, but still colours our thinking. Now some of you may think this idea soft, even silly. Other nations and cultures, I can assure you, esteem it far more, including some surprising examples. German has several powerful words for it, and I have been told by experts that the best German thought and writing are rich in it.

Russian likewise has several words, in particular two strong words that I can only feebly translate as 'sensitivity' and 'responsiveness'. The intelligentsia of Tsarist days, in spite of all the propaganda, had many fine features, and greatly esteemed these virtues[9]. The English were considered 'cold fish', because they could neither divine nor respond to others' feelings. It was considered a disaster if a Russian girl became engaged to an Englishman, because she would need a sensitive and responsive husband, and he, poor fellow. . . . ![10] Even now, if you read *Twenty Letters to a Friend,* by Stalin's daughter[11], you will find that people she likes and admires are nearly always 'sensitive'.

Now for some stories to illustrate this. There was once a young and brilliant French colonel, serving in the same colony with, but not under, an older man, a general, who happened to be in a civil post. Circumstances compelled them to meet, and disagree, a good deal, and they parted on uncordial terms. As years passed, the younger man was promoted more rapidly, till he outranked his former senior. In an important new posting he had official letters to write to his old, but respected antagonist. If he started in the formal style, for a senior to a junior: *Général,* this was as much as to say: 'See! my poor friend! where I am now, how I have passed over your head'. He was a sensitive man; he could not do it. Equally he could not start: *Mon général,* for this would be to abdicate his own rank. He pondered long, and began his letters: *Mon cher camarade.* The older man's heart was touched, and his face saved[12].

Now the younger man was Joseph Joffre, commander in 1914 of the French armies defending Paris; the older man was Galliéni, at the same time Military Governor of Paris. In the desperate crisis of the Battle of the Marne, with the German armies only fifteen miles from the gates of the capital, Galliéni scraped up every man he could find, and, having no transport, sent them out in a fleet of taxis to Joffre, whom they helped to turn the tide. War leaders have subordinated patriotic duty to personal rancour before now. But for Joffre's sensitivity, who knows? Paris might have fallen.

I have mentioned one sensitive police officer. I have often found members of the Metropolitan Police sensitive, as far as duty allows. Some years ago I was trying to park my car near Olympia, where there was a big exhibition. I had driven round the neighbouring streets for half an hour; all choc-a-bloc, or
banned. At length I came to a mean, dingy cul-de-sac; room for five cars
again 'no parking'. I was desperate. I looked round, hid the sign be
large and sooty laurel bush, and parked in triumph. As I got out,
materialized at my elbow. He had not been within fifty yards w
the car. Now if he had hectored me, I should probably have
probably ended up 'on a charge'. But he proved a man of sen
the situation. He probably knew of no earthly reason why
where I had, *but* the sign had been there. He smiled softly,

flat tone, neither commanding nor persuasive: 'You're going to put the sign back now, Sir, aren't you?' and walked away without even looking back. It was so utterly unexpected, I was as if hypnotized. Meekly, I backed out of the cul-de-sac, fished out and replaced the sign; meekly, I drove around for another half-hour until I did find a legitimate slot.

Then, of course, there is the other way. Malcolm Muggeridge was about to address an American women's club. After the lunch, the chairwoman arose and declared: 'Ladies! I am delighted to tell you that we now have over a thousand members, and our finances are very flourishing. As a result, we shall be able in future to bring to these meetings an entirely different and much better class of speaker! I now have pleasure in introducing. . . '!

I once met, and was talking, in a public place, with a well-known Aslib personality. You all know him, but I shall not name him. You will see why. A woman, whom I vaguely remembered, spotted me, rushed up and, to my horror, threw her arms round me, called me 'Darling John!', kissed me passionately, and enquired after my health in the tenderest terms. Under this shock I recalled that she was an actress I had met two or three times some years before, but had not seen or particularly thought of since. However incredible it may sound, with some stage-folk this is perfectly normal behaviour, with enemies as well as friends. What happens if they really love you I have never found out! The imagination boggles!

During all this I managed to shoot a look at my Aslib colleague. From his horrified expression he was rapidly revising whatever ideas he had about my private life, conjuring up who knows what visions of double, even treble lives! (This was before the 'permissive age'.)

I managed to free myself from the lady's embraces, we chatted for a few moments, and parted. I turned to explain this singular performance to my colleague, but he was gone! Now it was remarkably insensitive of this lady, seeing me talking to a respectably dressed and obviously untheatrical person, with a brief-case and I believe a rolled umbrella, to put me in this very embarrassing position. The next time I saw my colleague I tried to explain, but I do not think he believed me. He is in this audience. Perhaps he will now?

It was Freud, I believe, who first clearly saw that every human being needs, as a sort of mental vitamin, some esteem, status or importance. It can range from the plaudits of the world to the respect of a few mates at the work-place (best of all), the club, the pub. . . . Few if any are totally unworthy of it, and if a person does not get it, something in him curdles and sours.

If you persistently ignore this . . . if (especially with subordinates) you are persistently insensitive to people's feelings, you will lose (if you ever had) their respect, their trust, their co-operation. It's not very difficult! Even little things go a long way; a smile in passing, an enquiry about a sick wife or promising child, interest in their work, a bit of praise, if earned, anything which shows you see them as human beings and not components. Let no one say he has not the time! Management is about people. Of course the need for discipline and authority means that you cannot *show* yourself as sensitive as with intimates.

I have had many bosses. The one I rate highest was also the most sensitive. For example, if you asked to see him, and he had not seen you in two days, he rang you, told you why, and when he thought he could, and he did *not* leave this, as most directors would, to his secretary. (With others, you wait a fortnight, not knowing whether the man has forgotten all about it or not.) This man was no 'sissy'. He got through a lot of work. He could dominate a difficult meeting by personality, not just authority. He could dress you down magnificently. But he was *fair*; he listened first and decided after. He won my respect and loyalty as no other boss has in nearly forty years. If we had more like him, this country, I believe, would have far fewer industrial troubles.

How does one acquire sensitivity? I think, by getting into the habit of turning any situation involving people round in one's mind and looking at it from other viewpoints. If you have to make a decision affecting people, it is no use looking for a solution until you understand the problem; you cannot understand it until you have looked at it from everyone's angle. It may be a reallotment of desks or duties, or the sacking of an unsatisfactory employee. Doing it this way is hard, until you get the habit. It will occasionally change your decision. Far more often it will change the way you communicate it, so that you get co-operation instead of unco-operation.

If I have emphasized insensitivity as a cause more than any other, it is because I think there is need! But this reflects *my* code.

An example of multiple causes

In unco-operation the fault is often not only on one side, as another story will show. This is not a funny story; it is a very, very unfunny story.

In World War I Britain needed as war material fuming sulphuric acid. This is horrible stuff, like sulphuric acid, only more so, but known in trade, for some reason, as 'oleum'. (The only thing it shares with oil is viscosity.) We made a lot, but needed more. It was imported in special tankers lined with vitreous enamel. Whether because there were not enough, or some were sunk, the appropriate Ministry sent an ordinary oil tanker to collect a cargo from a foreign port. The exporters, after inspecting the ship, said something to this effect: 'Captain, your ship is quite unsuitable! Your authorities should know better than to send such a ship. It is true that, undiluted with water, oleum will not attack steel, but it picks up water quickly from the air, and will then attack it. The tanks cannot be sealed, because explosive gas may be given off. If you got a hole through to the sea even the size of a pin, dilution would increase quickly and whole sections of your ship would dissolve! You *might* get home safely but we dare not take the risk.' So the ship returned and her skipper reported all this. The Ministry was not amused! It was perfectly all right, he was to carry out his orders, so back they went. 'But, captain!' said the shippers, 'we have told you clearly that this ship will not do! You should have told your Ministry!' They told him all over again, and back the ship sailed. This time the civil servants were furious. They told the skipper the oleum was desperately needed, he was holding up the war effort, and there was dark talk of dereliction of duty. So the ship sailed again. The exporters shook their heads in despair: 'We have done our best, God knows! But . . . ' They loaded the ship with oleum, she sailed, and neither she nor any of her crew were ever seen again[13].

Now, in this appalling tale of unco-operation, who was to blame? 'The civil servants', most of us would say. Their conduct exemplified several of the causes I have mentioned:

(i) lack of trust (the captain of a big ship is, *ex officio,* a trustworthy person);

(ii) inability to see the other side;

(iii) conviction of superior knowledge (here, particularly, a little learning was a dangerous thing);

(iv) a remarkable insensitivity to the fate of the crew, drowning in warm sulphuric acid, if they were wrong.

But it does not end there. The exporters, knowing what officials *can* be like, should have given the captain a letter (if not the first time, most certainly the second) showing why they refused to ship. They, too, were insensitive to the possible treatment by officials of the skipper, and the fate of the crew. Even the captain showed a want of foresight and common sense in failing to insist on such a letter.

So the moral of this horrible tale is: in unco-operation, do not take the first cause you find as the only cause. Look for others, and search your own conscience.

I have told you stories dating back half a century or more. I do not believe, you see, that 'history is bunk'. Perhaps I could finally tell a modern one, to illustrate a quite different point.

A woman parked her car where parking was quite clearly banned. She looked carefully around to ensure she was unobserved, produced from her bag a slip of card, put it under the windscreen wiper, and walked away. In the next hour or two, three or four traffic wardens passed, and a policeman, looked at the windscreen, and smiled softly to themselves. None did anything. The woman reappeared, removed and put safely away the piece of card, and drove off.

What was the magic talisman? An old 'parking ticket'. The point? That you can be devilishly unco-operative by misusing a system for your own ends.

* * * *

This paper was originally in two parts, of which the above is the first. The second (and much of the discussion) dealt with unco-operation in library and information work. For lack of time, it had to be compressed to about ten minutes. It is, I think, a sufficiently interesting, useful and rarely covered subject to deserve a paper to itself which, with Aslib's kind co-operation, should appear later in *Aslib Proceedings*.

In preparing the first part for publication, I have omitted nothing of any consequence, and added some points I should have liked to have made. If it reads like a curious mixture of a 'state-of-the-art' report, an after-dinner speech, and a kind of secular sermon, well . . . I did say it was odd, did I not?

REFERENCES AND NOTES

1 AGARD EVANS, B. If I had my way—with publishers. *Aslib Proceedings,* 5, i, 1953, p. 16-20.

2 WOOTTON, BARBARA. BARONESS WOOTTON OF ABINGER. Expert and layman in contemporary society: problems of communication and function. *Aslib Proceedings,* **21**, vi, 1969, p. 225-36.

3 MONTAGU, ASHLEY. *On being human.* London, Abelard-Schuman, 1957.

4 CARNEGIE, DALE. *How to win friends & influence people.* Kingswood, Sy., The World's Work (1913) Ltd.

5 HODNETT, EDWARD. *The art of working with people.* New York, Harper, 1959.

6 ARGYLE, MICHAEL. *The psychology of interpersonal behaviour.* Harmondsworth, Mddx, Penguin Books, 1967.

7 CATTELL, R.B. *and* WARBURTON F.W. *Objective personality and motivation tests.* Urbana, University of Illinois Press, 1967. p. 203.

8 MONTAGU, ASHLEY. *Opus cit.,* p. 90-92.

9 JARINTZOV, N. *The Russians and their language.* Oxford, Blackwell, 1916. p. 18-22.

10 MONTAGU, ASHLEY. *Opus cit.,* p. 71.

11 ALLILUYEVA, SVETLANA. *Twenty letters to a friend.* Harmondsworth, Mddx, Penguin Books, 1968.

12 Told, as apparently true, by C. E. MONTAGUE (who was at British GHQ in World War I) in *A cock and bull story,* in a collection of short stories called *Action,* London, Chatto & Windus, 1930. The story is a nice example of what has recently been dubbed 'lateral thinking'; see DE BONO, EDWARD. *The use of lateral thinking.* London, Cape, 1967.

13 Told to me as true by Mr F. W. Clifford, Librarian, the Chemical Society, 1903-42. If this seems an unlikely source, it should be realized that in World War I there were hardly any scientists or technologists in the Civil Service, and when they met a scientific problem they consulted the appropriate learned society (but in this example, too late!). Mr Clifford, for whom I had a deep respect, told me many odd stories of those days; I wish I could remember half of them!

CO-OPERATIVE TRANSLATION SCHEME

D. J. URQUHART
Director, National Lending Library for Science and Technology

Paper presented at the 43rd Aslib Annual Conference, University of Warwick, Coventry, 21st–24th September 1969

SUMMARY AND DISCUSSION*

*We regret that the full text of Dr Urquhart's paper is not available. We publish here a short summary of his paper and a report of the discussion which followed.

DR Urquhart said that the work done by Aslib and the National Lending Library for Science and Technology within the field of translations was only the tip of the iceberg. He, however, was looking at the whole of the iceberg of scientific and technical translations.

Dr Urquhart then gave some statistics. He mentioned that 46 per cent of the periodicals at the NLL were in English or, to put it another way, about half the world's output of periodicals was in a foreign language. Of this half, two-thirds were in Russian, German and French, in that order, but if one asked scientists what they claimed to be able to read, then two-thirds of them would say French, one-third German, and one-twentieth Russian. This meant that if one took into account the fact that scientists worked in groups, often of about ten, it would be likely that one scientist would read French, probably one would read German and possibly one Russian.

Dr Urquhart then pointed out that forty years ago only French and German mattered and consequently many scientists could cope with these languages. He warned that in the future we must expect Chinese and Spanish to become increasingly important as languages with which the scientist will have to deal. The answer to the problem, Dr Urquhart said, was not to rely on translators but on the working scientists themselves, since the problem was not that of translating from Japanese into English but from Japanese *physics* into English *physics*. We should aim therefore to have within a research group one who can read French, one German, one Spanish, one Russian, one Chinese and one Japanese. To achieve this we need in the schools less concentration on French and more concentration on the other languages, so that about the same number of children learn each language. This would mean, of course, that teachers for some of these languages would have to be trained first.

Dr Urquhart asked what the palliatives were for this situation. The main question asked was whether there was a translation and, if so, where was it available. In the UK there are two main centres: Aslib, which maintains an index of references to translations available, and the NLL, which collects the actual translations. He mentioned that cover-to-cover translations were a good answer but he thought they were expensive. He pointed out that one of the recommendations of the Dainton Report was that translations should pay for themselves.

DISCUSSION

MR M. LINE (Bath University) said that translations will always be needed, and how can one induce a co-operative view in schools? There is a psychological resistance to reading foreign languages, especially as most scientists scan rather than read. There is a need for research into the demand for translations which might find three grades of demand: for example heavy, indicating the need for cover-to-cover translations; medium, indicating local translations by institutions, etc., and three, light, indicating a need for a central translation service with, say, a fourteen-day turn-round.

DR URQUHART replied that his point was that schools should have an equidistribution of foreign languages, i.e. less French and more Japanese.

MISS E. MARSH (Rutherford High Energy Laboratory) said that at Harwell a translations service is operated which is capable of providing very quick verbal translations, and could not this approach be used on a national basis?

DR URQUHART replied that he was not sure about this because he thought that technical translation required a subject expert, but that it was clearly wasteful to ask subject experts to become full-time translators.

MR R. D. GEE (IPC Group Management Limited) asked what the copyright problems were of submitting translations to Aslib, NLL, etc.

DR URQUHART said that it appears safe to work under the fair copying declaration.

MR M. W. HILL (National Reference Library of Science and Invention) said that it is possible to produce effective translations of abstruse material between a subject specialist and a translator. He agreed with Mr Line that a survey was needed. At NRLSI they produce quick partial translations which were of known use. Would it be useful to deposit these with the NLL?

DR URQUHART replied that he did not know. NLL is prepared to accept partial translations if they are in manuscript in order to see if there is a demand.

MR V BISKE (Burmah Oil Trading Limited) agreed with Mr Hill, and said that a partial translation would be useful providing a photocopy of the original accompanied that translation.

MR A. B. AGARD-EVANS (unattached, being retired) said that the only way to get a translation is for the translator to provide a rough version which could be vetted by the scientist, who must know some of the language. MPBW had translations which they were shy of depositing with the NLL because of their obvious roughness.

DR URQUHART then said he had heard that Euratom were providing working scientists with computer-translated translations, but did not know whether they were acceptable.

MR A E. A. BUYN (Koninklijke Nederlandsche Hoogovens en Staalfabrieken NV) said that the Euratom engineers were satisfied with machine translations as a substitute for anything better.

DR D. J CAMPBELL (independent) said that some scientists work in small teams. French and German are taught in English schools more than other languages because France and Germany are neighbours. He supported the value of Russian translations.

DR URQUHART replied that the child of the future will regard China as a neighbour.

MR S FRANCIS (School of Librarianship, North-Western Polytechnic) asked if they had not ignored the basic problem. He made a plea for better international coverage by abstracting services, and only when this was achieved would the total demand for translations be capable of assessment.

MRS O. L. SYMES (ACI Technical Centre Pty Limited, New South Wales) said that their organization had used the ETC World Index, and would like to see it enlarged to become more comprehensive, and to cumulate.

MR E. D. WIGGINS (Fisons Limited) supported co-operation between the translator and the scientist. He was against partial translation because of different needs. He thought the basic need was to know whether a translation existed.

MR J. H R. MARNS (AERE, Harwell) asked for better co-operation between the NLL and Aslib and asked if it were not possible to be able to send a request to NLL which could be answered by Aslib. What is the success rate of using indexes to find locations? He thought it was low and that centres were preferable to indexes.

THE DIRECTOR said that there has been co-operation for a number of years and that a request to the NLL was automatically telexed to Aslib, who scanned their index and NLL replied to the enquiry. He thought the success rate was between 14 per cent and 18 per cent, but it was difficult to say whether this was high or low, and Aslib, as a matter of policy, does not publish an index because to do so would change the entire purpose of the service.

Editor's note

For an account of the paper presented at the Aslib Annual Conference 1969 by Mr D. T. Richnell, entitled *National Co-operation: the report of the National Libraries Committee,* readers are referred to the paper by Mr Richnell published in the *Journal of Documentation* for September 1969, p. 185–96, entitled: *First thoughts on Dainton: a review of the report of the National Libraries Committee.* This paper is substantially the same as that presented at the Annual Conference.

CURRENT AWARENESS LIST

With the increasing number of items accessioned by the Aslib Library, the monthly list published in *Aslib Proceedings* has reached a size at which it is desirable to facilitate scanning by introducing some kind of subject grouping in preference to a straightforward alphabetical arrangement of entries.

From an analysis of recent monthly accessions lists, the following groupings have been developed, and, throughout 1969, recent papers and other publications will be listed in these main categories, whose scope is indicated below:

User Studies
Including reading techniques and habits; user training.

Library Systems
National centres and general libraries; university and college libraries; library co-operation.

Administration and Management
Buildings, staff, stock, including special materials; lending.

Printing and Publishing
Including writing, editorial work; bookselling; periodical references and citation patterns; copyright; legal aspects of computerized information.

Reprography
Materials, methods and systems; telex and facsimile transmission.

Subject Organization
Including special libraries and documentation centres, but not information systems; general bibliographies and the literature of special subjects.

Mechanization
Automation in general, including 'housekeeping' procedures; computer technology; machines applicable to documentation work. Automatic methods applied to more specific activities are placed with these activities.

Classification and Cataloguing
Including non-documentary coding; filing.

Language and Indexing
Linguistics, semantics, nomenclature, terminology; subject-headings, thesauri; translating.

Information Processing and Systems
Dissemination, storage and retrieval; data centres; reference and inquiry work.

Communication and Knowledge
Scientific work and its organization; information theory; non-documentary information exchange.

Professional Activity
Library science and documentation; professional education, associations, research and literature; directories.

These categories are not mutually exclusive but have been found convenient for the division of material currently published. It is hoped that users will find them an aid to scanning for new items of interest.

ELIZABETH MACK
Head of Library and
Information Services

CURRENT AWARENESS LIST

Items are available in the Aslib Library and may be borrowed unless marked to indicate reference copies.*

User Studies

COOVER, ROBERT W.
User needs and their effect on information center administration.
Special Libraries, vol.60, no.7, September 1969, p.446–56.
Method of studying user needs.

PETERSON, STEPHEN L.
Patterns of use of periodical literature.
College and Research Libraries, vol.30, no.5, September 1969, p.422–30.
Results of questionnaires distributed to a selected sample of graduate students in Michigan University.

Library Systems

HUMPHREYS, K. W.
Information work for industry and commerce in university libraries.
International Library Review, vol.1, no.3, July 1969, p.403–11.
Conclusions drawn from a survey.

LINE, MAURICE B.
Information services in university libraries.
Journal of Librarianship, vol.1, no.4, October 1969, p.211–24.

CORNEY, ELIZABETH
The information service in practice: an experiment at the City University library.
Journal of Librarianship, vol.1, no.4, October 1969, p.225–35.

LINTON, W. D.
Queen's University Science Library, Belfast.
Northern Ireland Libraries, vol.8, no.2, June 1969, p.47–53.

CARAVIA, PAUL
Recent experience with university libraries in Romania.
Unesco Bulletin for Libraries, vol.23, no.5, September/October 1969, p.257–61.

MADE, STANLEY M.
University libraries in English-speaking central Africa.
Journal of Librarianship, vol.1, no.4, October 1969, p.236–52.

SHEPARD, MARIETTA DANIELS
Co-operative acquisitions of Latin American materials.
Library Resources and Technical Services, vol.13, no.3, Summer 1969, p.347–60.

PARKER, RALPH H.
Computers, communications and library co-operation.
International Library Review, vol.1, no.3, July 1969, p.309–15.
Paper delivered to 1968 IFLA council under auspices of the Committee on mechanization.

Administration and Management

MARTYN, JOHN
Cost effectiveness in library management.
Aslib Electronics Group Newsletter, no.40, October 1969, p.3–9.

FAZAR, WILLARD
Program planning and budgeting theory: improved library effectiveness by use of the Planning—Programming—Budgeting System.
Special Libraries, vol.60, no.7, September 1969, p.423–33.

LAKHANPAL, S. K.
Job classification and evaluation—the basis for equitable salary administration in libraries.
Indian Librarian, vol.24, no.1, June 1969, p.5–11.

DOWNS, ROBERT B.
Doctoral degrees and library resources.
College and Research Libraries, vol.30, no.5, September 1969, p.417–21.
Recent additions to a report published in 1966 showing relationship between library holdings and the number of doctoral degrees granted in several American universities.

BLUH, PAMELA
A study of an inventory.
Library Resources and Technical Services, vol.13, no.3, Summer 1969, p.367–71.
Experiences in the first 18 months of an inventory at Johns Hopkins University Library.

JOHANNES, DIETER
Das technische Firmenschrifttum, seine Arten, Verwendungsmöglichkeiten und Erwerbung.
Dokumentation, Fachbibliothek, Werksbucherei, vol.17, no.6, August/September 1969, p.185–9.
Describes methods of acquisition and use for house journals, trade catalogues, etc.

KAIM, ANANA
Experienta uzinei 'Carbochim' in valorificarea prospectelor, cataloagelor de produse şi publicatiilor uzinale.
Probleme de Informare şi Documentare, vol.3, no.6, June 1969, p.341–7.
Use of trade literature in the Carbochim plant technical library.

BRENNER, LAWRENCE
A design for the display and storage of current periodicals.
Bulletin of the Medical Library Association, vol.57, no.3, July 1969, p.281–3.

VČERAŠNIJ, ROSTISLAV P.
Patent information and its problems.
Unesco Bulletin for Libraries, vol.23, no.5, September/October 1969, p.234–9.

Printing and Publishing

LAWANI, S. M. A.
Standard book numbering: its development and implications for library technical services.
Unesco Bulletin for Libraries, vol.23, no.5, September/October 1969, p.226–33.

FREYTAG, JURGEN
Die Inhalt-Form-Beziehungen bei Informationsquellen sowie einige Kriterion zu ihrer Bestimmung.
Informatik, vol.16, no.2, 1969, p.26–8.
The relationship between content and format in information sources and some criteria for their definition.

Reprography

HAMPSHIRE, T., *ed.*
Document reproduction survey. August 1969.
FID News Bulletin, vol.19, no.9, September 1969, p.90–3.

SIMMONS, PETER
Choosing data conversion equipment.
College and Research Libraries, vol.30, no.5, September 1969, p.431–6.
Consideration of keypunch and typewriter keyboards devices for encoding punched cards, paper tape, etc., for use in libraries.

GORITZ, W.
Stand und Entwicklung der Mikroverfilmung (technischer Unterlagen).
Dokumentation, Fachbibliothek, Werksbucherei, vol.17, no.6, August/September 1969, p.199–206.
A survey of microfilm techniques, equipment, standards and areas of development.

WOLK, L. J. VAN DER
Information transfer with microdocuments—the modern applications of microfiche.
Microfiche Foundation Newsletter, no.20, July 1969, p.11–12.
Translation of extracts of the paper delivered at the One Day Conference of the Swiss Society for Documentation, Zurich, 18 June 1969.

DIRECTORY of commercial microfilm services in the United Kingdom 1969–70.
NRCD Bulletin, vol.2, no.4, Autumn 1969, p.3–7.

Subject Organization

BENEDEK, JENO
Az OMKDK könyvtári tevékenysége és annak távlatai.
Tudományos és Múszaki Tájékoztatás, vol.16, no.6, June 1969, p.403–15.
A review of the activities and developments of the Hungarian Central Technical Library and Documentation Centre.

IRVINE, BETTY JO
Slide collections in art libraries.
College and Research Libraries, vol.30, no.5, September 1969, p.443–5.
Description of a current project to remedy the lack of professional literature concerning slide collections.

CHRISTIANSON, ELIN, *and* WOLFE, PEGGY
A look at advertising and marketing libraries.
Special Libraries, vol.60, no.7, September 1969, p.437–45.
Results of SLA survey of industrial libraries on advertising and marketing.

GROPP, ARTHUR E.
Bibliographical activities of special libraries in Latin America.
International Library Review, vol.1, no.3, July 1969, p.375–8.

MCDONALD, JULIA M.
Special libraries.
Illinois Libraries, vol.51, no.7, September 1969, p.545–64.
A description of six special libraries in the Chicago area serving the fields of advertising, education, health, insurance and banking, including the Information Center at J. Walter Thompson Company.

BARFIELD, ISAAC R.
Wanted—a new approach to law librarianship.
Law Library Journal, vol.62, no.3, August 1969, p.279–81.
Description of the function, duties and character of a law librarian.

FISHER, BARBARA
Beyond symbiosis: the humanist, the librarian and the computer.
Computers and the Humanities, vol.4, no.1, September 1969, p.19–24.
Problems involved in obtaining rapid access to literature in the humanities.

*YORK. University. *J. B. Morrell Library*
Select list of reference and bibliographical material in philosophy, religion, the arts,

literature, and language. York, the Library, 1969.
125 p. (University of York Library Guide no. 5.)

*YORK. University. *Library*
British government publications. Heslington, York, the Library, 1969.
25 p. (University of York Library Guide no.4.)

Mechanization

PETRIWSKY, EUGENE, *and* HEWITT, JOE
Producing card copy from book catalogs with the XEROX Model 4 camera.
Library Resources and Technical Services, vol.13, no.3, Summer 1969, p.361–6.

BOSSUAT, MARIE-LOUISE, *and* ANNICK, BERNARD
Un exemple d'emploi d'ordinateurs électroniques pour l'impression et la gestion des catalogues de périodiques.
Bulletin des Bibliothèques de France, vol.14, no.6, June 1969, p.243–56.

JENNINGS, MICHAEL A.
Optimizing library automation with a central dynamic store.
College and Research Libraries, vol.30, no.5, September 1969, p.397–404.
Discussion of the implementation of the Data Bank concept utilizing an on-line computer system, with an emphasis on the acquisition, serials, cataloging, and circulation functions of a library.

BURKE, FRANK G.
Computer techniques for the National Archives.
Computers and the Humanities, vol.4, no.1, September 1969, p.11–18.

HOWARTH, R. J., *and* LIM, A. L.
An approach to program documentation.
Computer Bulletin, vol.13, no.8, August 1969, p.291–7.
Unique program identification scheme based on the ACM classification system for *Computing Reviews.*

Classification and Cataloguing

ROSENTHAL, JOSEPH A.
Nonprofessionals and cataloging: a survey of five libraries.
Library Resources and Technical Services, vol.13, no.3, Summer 1969, p.321–31.

Language and Indexing

SCHWARTZ, JAMES H.
Some observations concerning *Chemical Abstracts* formula indexes.
Journal of Chemical Documentation, vol.9, no.3, August 1969, p.169–71.
Results of a small study to determine the certainty of locating organic compounds by using the molecular formula indexes of *Chemical Abstracts.*

HEIBICH, JAN
Direct selection of keywords for the KWIC index.
Information Storage and Retrieval, vol.5, no.3, October 1969, p.123–8.

BRETON, JEAN-MARIE
Informatique juridique—indexation par mots-clés ou texte intégral?
Informatique et Gestion, no.8, May 1969, p.25–6.

TOMA, EUGENIU, *and* PURCARU, GEORGE
Criterii de evaluare a eficacitătii indexării Partea I. Studiu teoretic.
Studii şi Cercetari de Documentare, vol.11, no.1, March 1969, p.23–33.
Formalized vocabularies are studied with the aid of statistical methods used for the analysis of languages.

RADHAKRISHNAN, T., *and* RAJARAMAN, V.
Higher level programming languages in information retrieval.
Annals of Library Science and Documentation, vol.15, no.3, September 1968, p.155–9.

*FAA thesaurus of technical descriptors. [Washington, DC], Federal Aviation Administration, 1969.
60 p. (AD 686 837.)

NEAMTU, OCTAVIAN
Către noi tipuri de tezaure.
Studii şi Cercetari de Documentare, vol.11, no.1, March 1969, p.35–40.
Discussion of cataloguing, research and orientation thesauri.

SILVA, GEORGETTE, *and* LOVE, HAROLD
The identification of text variants by computer.
Information Storage and Retrieval, vol.5, no.3, October 1969, p.89–108.

RICHTER, ERICH
Russisch fur Bibliothekare.
Dokumentation, Fachbibliothek, Werksbucherei, vol.17, no.6, August/September 1969, p.191–4.
A summary of the book with the same title by Peter Bruhn, 1968. A manual for librarians handling Russian material.

Information Processing and Systems

MEETHAM, ROGER
Information retrieval the essential technology. London, Aldus Books, 1969. SBN 490 00134 3.
192 p., illus. (Aldus Science and Technology Series.)

STARKER, LEE N., *and others*
A multi-level retrieval system, II. Medium-sized collections.
Journal of Chemical Documentation, vol.9, no.3, August 1969, p.161–7.
System based on a Termatrex drill, its compatibility with IBM systems and equipment.

SCHIFF, ERVIN
Az európai Atomenergia Közösség és a Nemzetközi Munkaügyi Hivatal tájékoztatási rendszere.
Tudományos Müszaki Tájékoztatás, vol.16, no.6, June 1969, p.431–45.
Comparison of the mechanized information systems of Euratom and the ILO.

Communication and Knowledge

MEETHAM, A. R.
Communication theory and the evaluation of information retrieval systems.
Information Storage and Retrieval, vol.5, no.3, October 1969, p.129–34.

Professional Activity

HAVARD-WILLIAMS, P.
The Dainton report.
Journal of Librarianship, vol.1, no.4, October 1969, p.264–71.
Review of the report.

WILSON, T. D.
Teaching subject bibliography.
Journal of Education for Librarianship, vol.9, no.4, Spring 1969, p.338–44.
The methods used by the Newcastle School of Librarianship.

*DIRECTORY of special libraries; 2nd ed. completely revised and enlarged through direct enquiry during 1968. Tokyo, Senmon Toshokan Kyogikai, 1969.
379 p.

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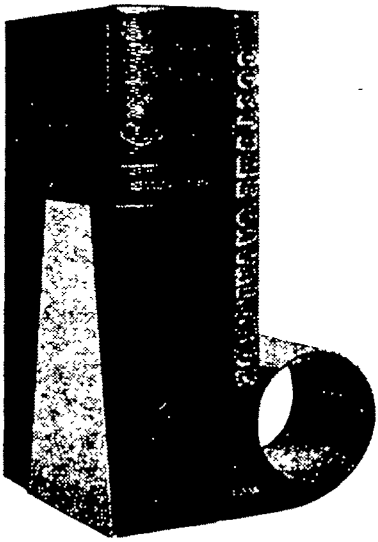

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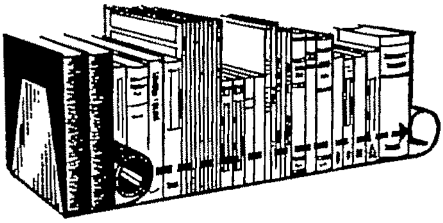

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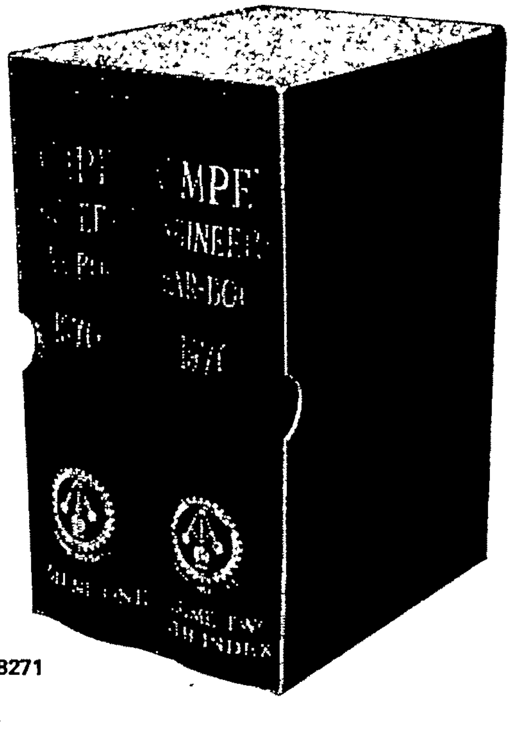

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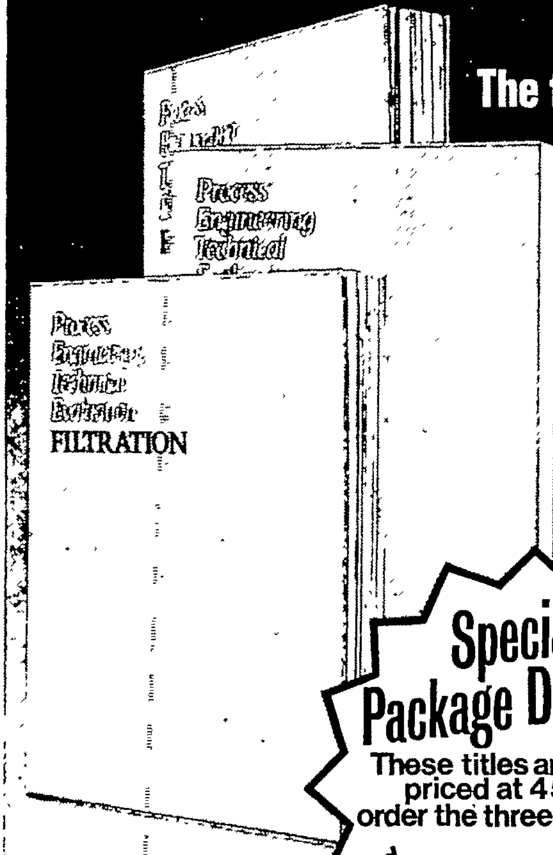

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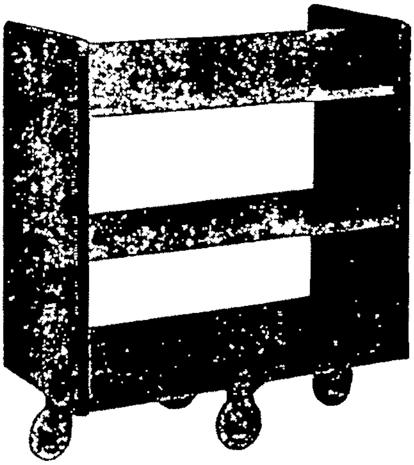

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